Diamond

Service Manual



HTC Proprietary

Confidential Treatment Requested

Rev. A05

HTC Corporation

Engineering Mobility

REVISION CONTROL TABLE

REV	DATE	CONTENTS	DEPT	REVISED	STAGE
AX01	2008/04/14	Fist Draft	PSE	Steven Liu	CVT
A01	2008/5/9	1. Modify product overview 2. Add RF spec 3. Add pre-load process	PSE	Steven Liu	MV
A02	2008/5/29	1. Modify the pre-load process in chapter 4 2. Modify ESPL material P/N 3.Modify the idle current specification in the page no. 71	PSE	Steven Liu	MP
A03	2008/6/9	Modify the pre-load process from page no. 53~56	PSE	Steven Liu	MP
A04	2008/6/14	1. Modify the specification for G-sensor in the page no. 7 2. Remove the matrix table in the pre-load process	PSE	Steven Liu	MP
A05	2008/6/21	1. Modify the disassembly process in page no.23, 24 and 30 2. Modify the pre-load process from page no. 53~57 3. Modify the SPL list in Chapter 9.1 4. Modify main board current leakage test procedure in the chapter No.5	PSE	Steven Liu	MP

Table of Contents

1. Introduction

- This manual provides the technical information to support the service activities of Diamond.
- This document contains highly confidential information, so any or all of this document should not be revealed to any third party.
  - Chapter 1: Introduction-This Chapter is about Products features and basic Product function. After reading this chapter, you will know what feature the product has and basic hardware operation. Also you will know how to perform soft-rest and hard-rest in this chapter.
  - Chapter 2: Device Dissembling and Assembling Procedure- After reading this chapter, you will learn how to disassemble and assemble the product. Also, you will know what tools to use and the torque. Please follow the instruction to dissemble the unit to prevent from damaging the unit.
  - Chapter 3: ROM Re-flash Procedure- After reading this chapter, you will learn how to perform the ROM image re-flesh by using RUU and SD-Card. Also you can find the steps of enter the boot loader mode.
  - Chapter 4: DIAGNOSTIC PROGRAM- After reading this chapter, you will learn
    - How to use the diagnostic program to perform unit function test
    - How to test some functions in Windows Mobile mode (ex. WLAN, Bluetooth, and USB etc…)
  - Chapter 5: Power measurement test- After reading this chapter, you will learn how to use MB leakage test procedure and battery run-down test (Battery Capacity Measurement).
  - Chapter 6: Cosmetic Inspection Criteria- After reading this chapter you will learn the appearance quality inspection criteria, ex. Display, bezel, and housing etc…
  - Chapter 7: Generic Troubleshooting- After reading this chapter, you will learn how to do generic trouble-shooting.
  - Chapter 8: Generic Labeling Plan- In this chapter, you will find generic labels for reference, ex. Regulation label, and battery label etc…
  - Chapter 9: Generic Spare Part List and Photos- In this chapter, you will find Spar parts reference list and photos for repairing, including unit and Board level.
  - Chapter 10: RF Antenna Specification- Reference Spec for RF test.

1.1 Product Features

Platform

- Ultra Slim bar type PDA phone form factor
- Microsoft Windows Mobile 6.1 professional

Dimension

- 102 mm(L) x 51 mm(W) x 11.5 mm(T)

[W/ 900mAH battery]

Processor/Chipset

- Qualcomm MSM 7201A, 528 MHz

Memory

- ROM: 256 MB (for programs and users' storage)
- NAND: 4 GB
- RAM: 196 MB DDR RAM (include 64MB memory in baseband)

LCD Module

- 2.8" VGA dots resolution
- 64K-color TFT LCD with LED back light
- Touch Screen

HSDPA/WCDMA/EDGE/GPRS/GSM Function

- Internal antenna
- HSDPA/UMTS (2100/900 MHz for EU, Asia and Softbank, 850/1900 for US, Latin America SKU3, 2100/850 for Telstra, Latin America SKU1&SKU2) and GSM/GPRS/EDGE Tri-band (900/1800/1900Mhz for EU, Asia, Softbank, E-Mobile, Telstra, Latin America SKU2 and 850/1800/1900 for US, Latin America SKU1&3)
- HSDPA/UMTS
  - 850: 824-849 MHz, 869-894 MHz (Band V)
  - 900: 880-915 MHz, 925-960 MHz (Band VIII)
  - 1900: 1850-1910MHz, 1930-1990MHz (Band II)
  - 2100: 1920-1980MHz, 2110-2170MHz (Band I)
- GSM/GPRS/EDGE Tri-band
  - 850: 824-849, 869-894MHz
  - 900: 880-915, 925-960MHz
  - 1800: 1710-1785, 1805-1880MHz
  - 1900: 1850-1910, 1930-1990MHz
- HSDPA/ UMTS

3GPP Release 5 compliant

Up to 3.6/7.2Mbps peak rate

- HSUPA [Option, depends on carrier engagement]

Category 5, 2Mbps

Concurrent: DL up to 3.6Mbs and UL up to 2Mbps

- Global roaming
- Auto band switching
- Hand over and cell selection between GSM/GPRS/EDGE and UMTS
- DTM
- SAIC (circuit switch only)
- Equalizer (HSDPA channels only)
- Audio codec: AMR-NB, AMR-WB, EFR, FR, HR
- SMS (MO, MT), concatenated SMS (640 characters)
- Support MCC-MNC-UC-ID as stated in 3GPP TS 25.401 R99, section 6, for both RIL and radio
- Generic services:
- Call holding/waiting/forwarding
- Call barring

- CLI (Calling Line Identity)
- Display own number
- Network selection
- Cell broadcast
- Multi-party conference call
- ooSipcon
- Phase 2+ unstructured supplementary service data
- Network Lock
- HSC (partial support)

- EGPRS Functionality
- EGPRS class B
- Multi-slot standard class 10
- PBCCH
- Link Adaptation and Incremental Redundancy
- USIM/SIM
- 1.8/3V of UICC
- USIM Application at least according to 3GPP TS 31.102
- SIM Application Tool Kit release 96 complete, 98 class 3, and 99 partial
- Over the Air (OTA) programming
- FDN
- ADN
- Security Pin 1 & 2 control
- EAP-SIM

Standalone GPS (Qualcomm based solution)

- Internal GPS antenna
- Sensitivity : better than -150dBm for outdoor usage
- Support NMEA 0183 version 3.0 or above
- Dynamically allocate parallel channel GPS receiver
- Acquisition time
- Hot start: 8 seconds, typical TTFF (open sky & static condition)
- Warm start: 60 seconds, typical TTFF (open sky & static condition)
- Cold start: 75 seconds, typical TTFF (open sky & static condition)
- Update rate: once/1sec (default)
- GPS Accuracy
- Position: < 15 meters, 95% typical
- Velocity: 0.05 meter/sec steady state

A-GPS (*Qualcomm Based solution)*

- Support UE-Based & UE-Assisted A-GPS
- OMA SUPL v1.0 compliance (v2.0 if available)
- SUPL-RRLP
- SUPL-RRC (optional) (TBD)
- WAP push initiated SUPL
- Standard 3GPP A-GPS compliance
- 3GPP TS 44.031 (RRLP 5.12)
- 3GPP TS 25.305 (GSM & UMTS)
- JSR 179 (Location API) support
- Performance requirement
- TTFF (95% successful rate): < 20 seconds
- 2D Location Error (95% successful rate): < 100 m
- Sensitivity requirement
- GPS for one satellite: up to -142dBm
- GPS for remaining satellite: up to -147dBm
- 3GPP TS 25.171 compliance (Requirement for support of Assisted Global Positioning System)
- 3GPP 34.171 (Terminal conformance specification, Assisted Global Positioning System)
- 3GPP TS 34.108 (Common test environments for User Equipment conformance testing)

Motion G-sensor

- Tri-Axis Accelerometer
- Resolution: 1.22 milli-g

rtraitAuto/ po landscape mode change when device orientation change

FM Radio

ringTu range: 87.5Mhz ~ 108Mhz

enFreq cy space: 100Khz

to Au channel search

Digital Camera

amMain era: (manufacture option)

ga3 pixel camera auto focus

d 2 camera: (manufacture option)

- Color CMOS VGA camera

Keyboard/Button/Switch

wePo r button (Wake up key)

- Short Press: system on/off

ngLo Press: power on/off

C HT navigator include

-5 way navigator pad

- Home

ackB / Clear

d /Sen Hands-free

g Lon press during the call: handsfree on/off

- End

e VolUp/Down button

- Reset

Notification

- Notification by sound, vibration, navigator LEDs or status shown on the display

Audio

- Built-in Microphone
- Receiver

udLo speaker for Hands-Free supported

upFull d lex

o sAudi ampling rate

- Recording (uplink): 8-bits or 16-bits with 8KHz, 11KHz, 22KHz, 44KHz

ckPlayba (downlink): 16-bits with 44KHz

- AMR-NB/AMRWB/ AAC/AAC+/eAAC+/WAV/WMA/MP3 codec

o PAudi ath Routing

othBlueto

- Receiver
- Speaker

setHead

Connectivity & Interface

othBlueto

- Compliant with v2.0 with EDR

assC 2 transmit power

portedSup profiles:

P GA (Generic access profile)

erialSPP (S port profile)

bjectOPP (O push profile)

- GOEP (generic object exchange profile)

tiveAS Sync-Over-Bluetooth

- HSP (headset profile)

P HF (Handsfree profile)

DPA2 (Advanced Audio Distribution profile)

- AVRCP (Audio/Video Remote control Profile)

D HI (Human interface device profile)

cessSIM Ac Profile

ceServi Discovery Application Profile

- BPP (basic printing profile)
- FTP (file transfer profile)
- PAN (personal area networking profile)
- DUN (Dial-up profile)
- PBAP (Phone Book Access Profile)

□ Co-exist with WiFi

Fi Wi [manufacture option]

□ IEEE 802.11b/g compliant

□ Internal WLAN antenna

□ Data rate auto fallback for extended range

□ ELP mode

cuSe 802.11i and AES

□ WPA2 authentication – WEP, WPA2, PSK, EAP-TLS, PEAP, LEAP, EAP-SIM

alingSi interfaces between the terminal device and the servers: mutually authenticated and encrypted utilizing TLS (RFC 2246) with RC4 encryption with SGA1 used as the message integrity check

□ QoS

2.11D WME QoS

2.11De

st FaAP to AP handover

□ HTC ExtUSB 11-pin mini-USB

□ USB 2.0 Client with High / Full Speed

o Jack Audi

2W Hsupport

ssMa Storage support

□ 1.8/3V USIM/SIM card slot

onRFecto r for testing

Power

□ Battery

woTremovable and rechargeable Lithium ion battery sku, 900 mAH

rgingCha time: < 3 hours

□ Battery life – 900mAH

WMPlaying A: 7 hours

Playing WMA: 10 hours

k timTale: 2.95 ~ 5.2 hours for GSM

k timTale: 1.3 ~ 5.2 hours for UMTS

o TVideelephony time: 77~109 minutes

bySitand me: 219~329 hours for GSM

bySitand me: 195 ~ 379 hours for UMTS

dapAtCor a

puAtC 100 ~ 240V AC, 50/60 Hz

e dThevice shall be able to detect the AC adapter complied with China adapter standard.

e ATC adapter which ship to China shall comply with China adapter standard

ut:D5CV outp 1A

nt Ambight sensor

Stylus

ckLtype mechanism with plug in /out detect and magnetic function

Lanyard Hole

□ A lanyard hole allow user to attach various stylish pendant to the phone.

Accessories

ckQStuiart Guide [Inbox]

□ CD (User manual & Sync. software) [Inbox]

n PSrcreoteector [Inbox]

[InStbyoxl]us

□ Travel Charger [Inbox]

□ USB Sync Cable (mini-USB/USB) [Inbox]

□ Battery with battery cover [Inbox]

redWStereo Headset [Inbox]

uchPo [Inbox]

in-3-1 stylus

□ 3.5 mm audio adaptor cable with earphone, HS U110

redWRemote Controller with Earphone, RC E100

noMBluetooth Headset, BH M200

o BSltuereetooth Headset, BH S100

□ Bluetooth Keyboard

-in41 multifunction audio cable

r □Charger

□Holder

4013AH extended battery

Compatibility Test :

Below accessories are required to do the compatibility test

no Bluetooth Headset, BH M100

e 11-pin to 5pin + 6pin

e 11-pin to 5pin + 3.5 mm Audio Jack

e 11-pin to 5-pin + 2.5 mm Audio Jack

sfreeHandCarkit : Parrot CK3400LS, Parrot MK6100,

Parrot Minikit, Audi, BMW & Mercedes incar solutions

otBConference: Parrot Conference

otBSpeaker: Parrot Boombox

Microsoft Windows Mobile 6 Professional (PPC) Applications

rosoft Outlook Mobile

lendar, Contacts, Me ssaging (SMS/E-mail), Tasks, & Voice Notes, Email Set Up Wizard

h Mails

crosoft Internet Explorer Mobile

crosoft Media Player Mobile

rosoft ActiveSync

crosoft Windows Mobile Update

crosoft Windows Mobile Marketplace

□ Internet Sharing

re Pic Video

mesa

□ File Explorer

□ Device Management

cuSty Enhancement

geStoral Encryption, Device Lock

rosoft Office Mobile

□ Word, Excel & PowerPoint Mobile

crosoft Windows Live!

ndows Live Messenger

ndows Live Mail (Push Mail)

ndows Live Contacts

ndows Live Search

ndows Live Spaces

ndows Smart Dialing

crosoft Remote Desktop Mobile [optional]

Value Added Applications

a /Camecorder

ra Cardmode

coEing format: JPEG

□ Resolution: 2048x1536 (if camera is 3M), UXGA 1600x1200, SXGA 1280x960, VGA 640x480, QVGA 320x240, QQVGA 160x120

ghtNMode

gitDi Zooming: up to 8x

ndTDate aStamp

cocamMode

s e15fpding for QVGA resolution

coEing format

63H.2AMR-NB

□ MPEG4 + AMR-NB

ngRine

□ MIDI

olyphonic & Standard MIDI format 0 and 1 (SMF) / SP MIDI

□ MP3, AAC, AAC+, WMA, WAV and AMR-NB

recDShow Filters for WMP - Audio

o Playback format: AAC, AAC+, eAAC+, MP3, WMA, WAV, AMR, AMR-NB/WB, M4A, AWB, SPMidi

- DirectShow Filters for WMP - Video

Video Playback format: H.263, MPEG4, WMV, Motion JPEG (AVI), H. 264

- Min. 30 fps decoding for H.263 & MPEG4 & H. 264@ QVGA resolution
- Video scale up to VGA
- Codec Bit Rate: 64Kbps (playback)
- Picture Enhancement for Pictures & Videos
- Graphics: JPEG, GIF87a, GIF89a, PNG, WBMP
- Video Thumbnail Preview: H.263, MPEG4, and Motion JPEG (AVI)
- 3G-324M Video Telephony
- Phone Canvas
- Symbol Table SIP for PPC
- HTC Album
- EZ SIP
- ZIP
- MMS Client
- Partial compliant to MMS 1.2 & MMS 1.3 (When available)
- Java virtual machine (J2ME, CLDC 1.1, MIDP 2.0)
- JSR 185 JTWI
- JSR 75 PIM access
- JSR 120 Wireless Messaging API
- JSR 135 Mobile Media API
- Document Viewer - PDF
- OMA DRM Engine: For all types of files (Pictures, audio, application etc.), and also all types of delivery method (MMS, email etc.)
- OMA 1.0 / 2.0 when available
- Multi-DRM support : MSFT & OMA DRM
- SIM Manager
- Comm. Manager
- STK
- Audio Manager
- Voice Dial & Command
- Voice Recorder (AMR only)
- Task Manager
- Backup Tool
- TouchFLO Scrolling
- Audio Booster
- Bluetooth FTP Profile/Explorer
- Bluetooth BPP
- Bluetooth SAP
- Network Plug-in for file explore
- FM Radio application
- YouTube client
- Streaming Video Player
- Opera Browser
- Large start menu
- Long press end key
- Startup animation engine
- Manila
- HTC Gizmo
- Album
- Music
- RSS Hub
- Voice speed dial
- Flash Lite 2.1 player
- Flash Lite 2.1 plug-in

Carrier Specific Applications

- Abaxia Home Screen (Orange)
- Mobile TV (Vodafone)
- Pocket Video Player (Orange)
- World Card Mobile
- Network Address Book (SynML)(O2DE)
- Visto Small Icon(Stub client) (Vodafone)
- Voice Commander (HTC Asia)

- Talking dictionary(HTC Asia)
- Antivirus (Vodafone)
- RIM BlackBerry Push E-mail Client (Vodafone)
- WAP Push (Vodafone)
- GPS Navigation SW – Copilot
- GPS Navigation SW – TomTom
- GPS Navigation SW – Telmap(Vodafone)
- GPS Navigation SW – Mappy(Vodafone)
- GPS Navigation SW – Webrasca(Vodafone)

Regulatory

- FCC certification [Operator dependent]
- R&TTE: EMC / EMI, Safety SAR [European Union]
- Wi-Fi Certification [manufacture option]
- BQB (Bluetooth Qualification Body) certification
- Windows Mobile Logo (NTSL)
- USB certification
- CB certificate / report [International]
- UAELAB [UAE]
- ICASA [T.B.D.] [South Africa]

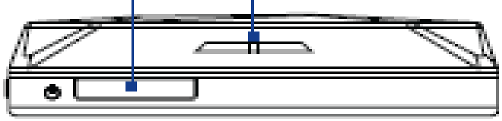
1.2 Product overview

Getting to Know Your Touch Phone and Accessories

Top panel

POWER
Press to turn off the display temporarily. To turn off the power, press and hold for about 5 seconds.
For more information, see "Starting Up" in this chapter.

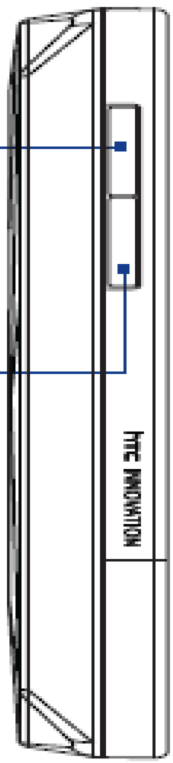
Speaker



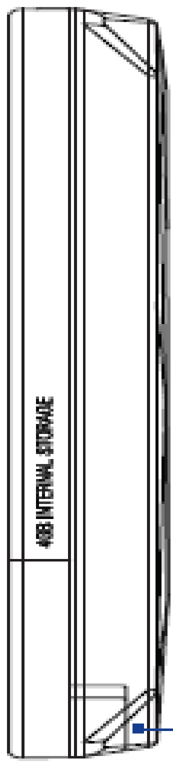
Left panel

VOLUME UP
During a call or when playing music, press this button to increase the volume.

VOLUME DOWN
During a call or when playing music, press this button to lower the volume.

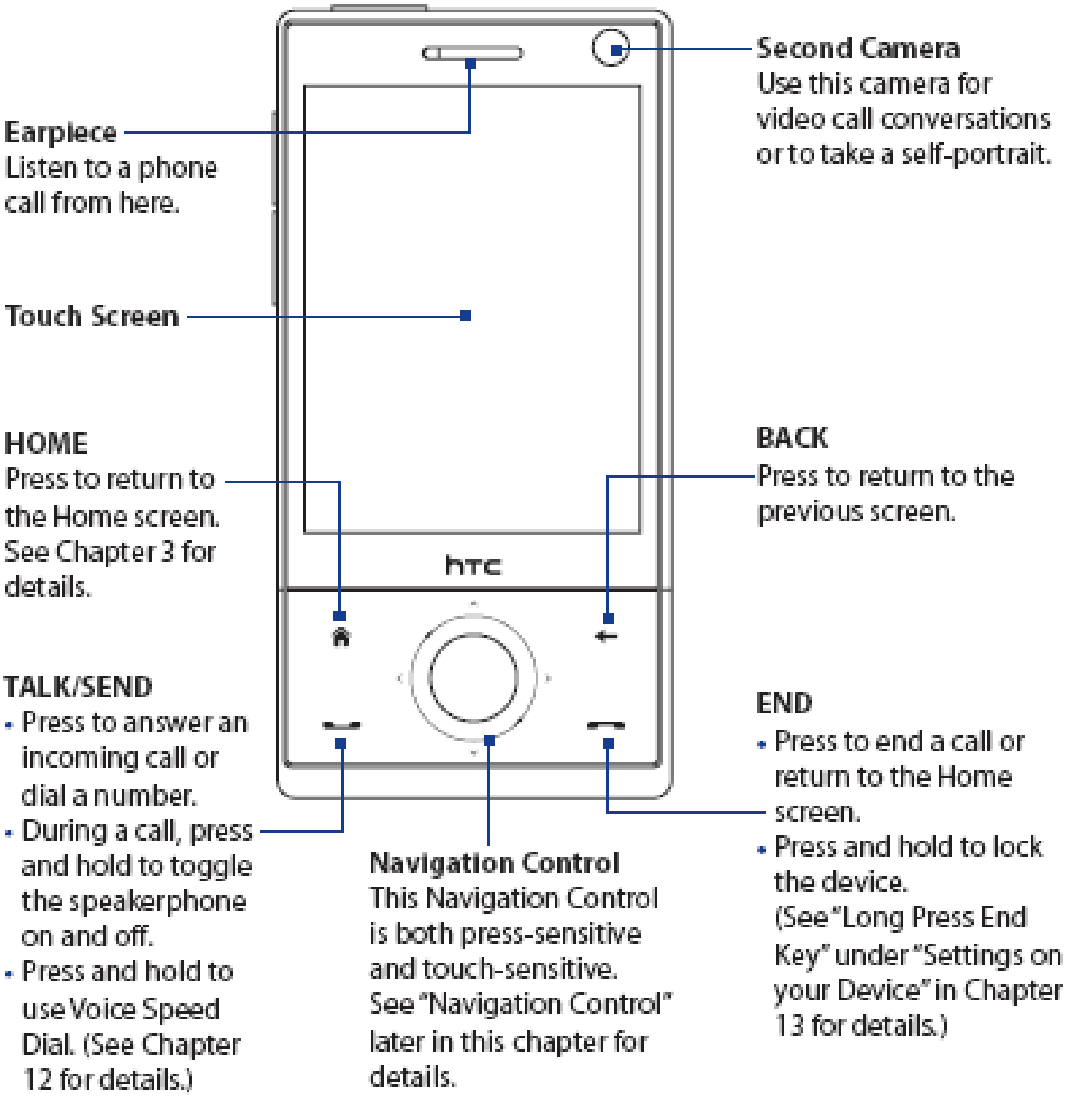


Right panel



Stylus
(See "Stylus" in this chapter for details.)

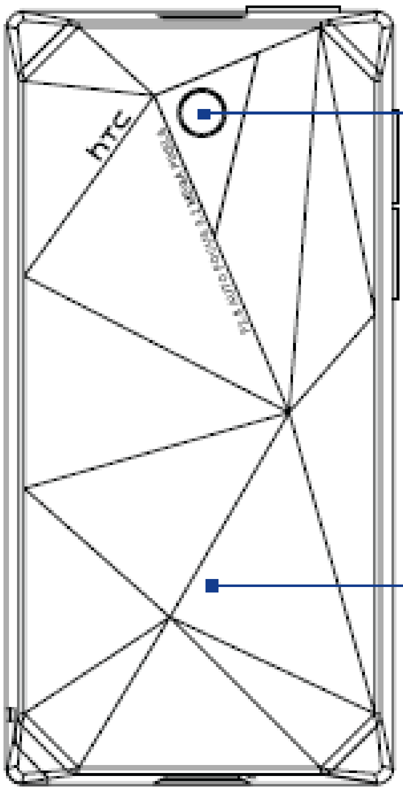
Front panel



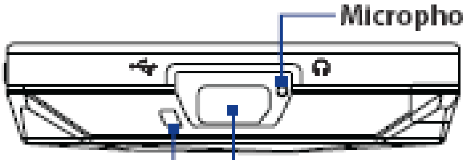
Notes When using the four buttons — HOME, BACK, TALK/SEND, and END — and the Navigation Control, please observe the following precautions:

- Make sure to press on the icons of the four buttons for the best accuracy. When pressing on the Navigation Control, make sure to press the outer areas near the ENTER button for directional control.
- For best results, press with your fingertip. Do not wear gloves.

Back panel



Bottom panel



Accessories

The product package includes the following items and accessories:

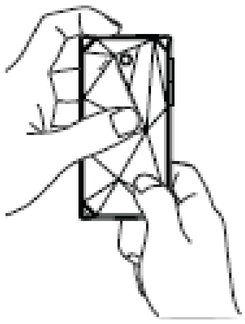
- Battery
- AC adapter
- Screen protector
- Stereo headset
- USB sync cable
- Quick Start Guide and TouchFLO 3D Guide
- Getting Started and Application discs
- Extra stylus

1.2 Installing the SIM Card and Battery

Always turn off your device before installing or replacing the SIM card and battery. You also need to remove the back cover before you can install these components.

To remove the back cover

1. Make sure your device is turned off.
2. Hold the device with both hands and the front panel facing down.
3. Push the back cover up with your thumb until it disengages from the device and then slide it up to remove.



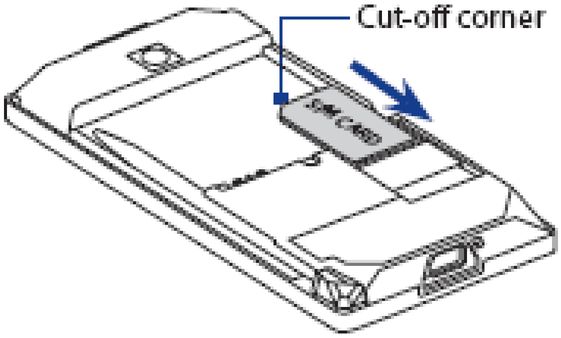
SIM card

The SIM card contains your phone number, service details, and phonebook/ message memory. Your device supports both 1.8V and 3V SIM cards.

Note Some legacy SIM cards may not function with your device. You should consult with your service provider for a replacement SIM card. There may be fees for this service.

To install the SIM card

1. Make sure your device is turned off.
2. Locate the SIM card slot, then insert the SIM card with its gold contacts facing down and its cut-off corner facing out the card slot.
3. Slide the SIM card completely into the slot.



To remove the SIM card

1. Remove the battery if it is installed.
2. Slide the SIM card out from the SIM card slot with your thumb.

Battery

Your device comes with a rechargeable Lithium-ion or Lithium-ion polymer battery and is designed to use only manufacturer-specified original batteries and accessories. Battery performance depends on many factors, including network configuration, signal strength, the temperature of the environment in which you operate your device, the features and/or settings you select and use, items attached to connecting ports, and your voice, data, and other program usage patterns.

Battery life estimates (approximations):

- Standby time: Up to **285** hours for GSM
  Up to **396** hours for WCDMA
- Talk time: Up to **330** minutes for GSM
  Up to **270** minutes WCDMA
- Video call time: Up to **145** minutes for WCDMA

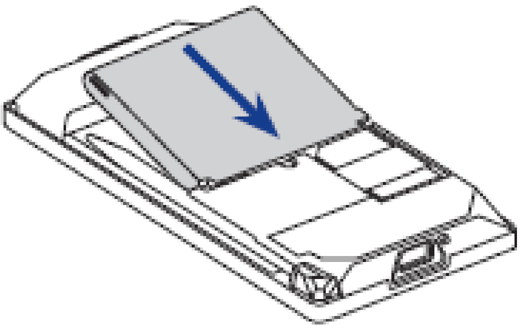
Note Battery life is subject to network and phone usage.

Warning! To reduce risk of fire or burns:

- Do not attempt to open, disassemble, or service the battery pack.
- Do not crush, puncture, short external contacts, or dispose of in fire or water.
- Do not expose to temperatures above 60°C (140°F).
- Replace only with the battery pack designated for this product.
- Recycle or dispose of used battery as stipulated by local regulations.

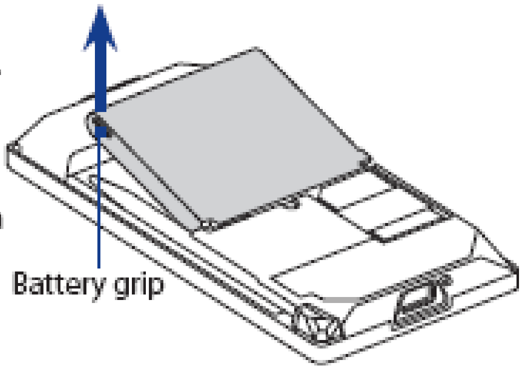
To install the battery

1. Align the battery's exposed copper contacts with the battery connectors inside the battery compartment.
2. Insert the contact's side of the battery first and then gently push the battery into place.
3. Replace the back cover.



To remove the battery

1. Make sure your device is turned off.
2. Remove the back cover.
3. The top left and right sides of the battery have protruding grips. Lift a protruding grip from either side to remove the battery.



2. Device Disassembling and Assembling Procedure

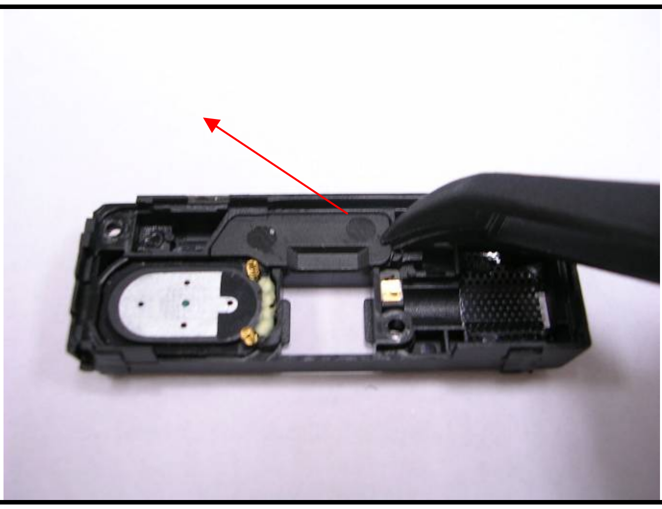
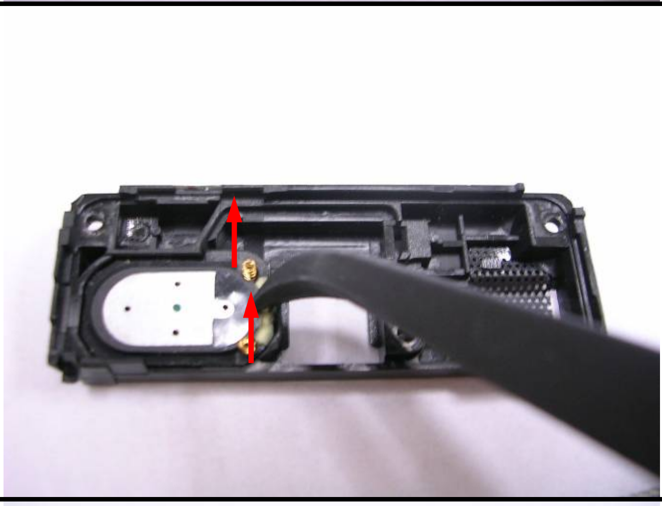
2.1 Tools List

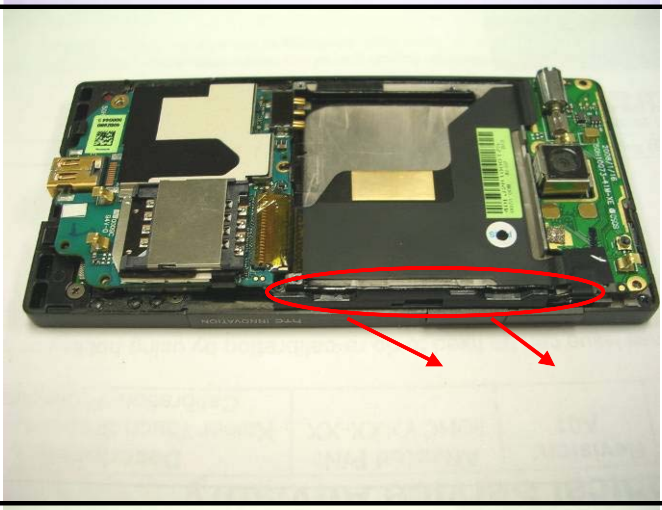
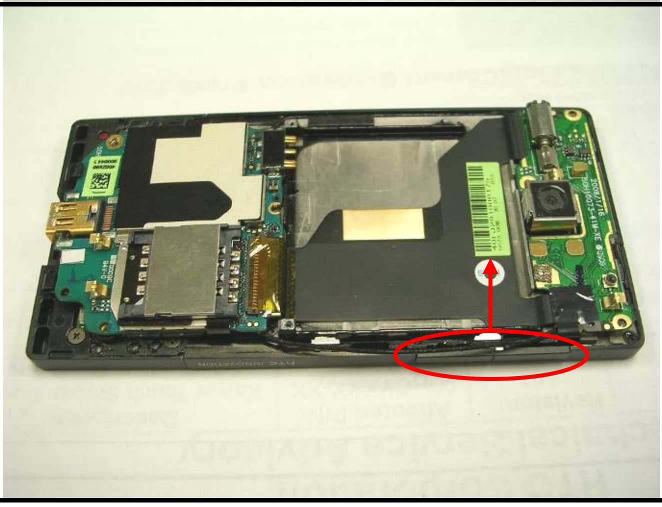
level	No.	Item	Vendor	P/N
L 1	1	Mini USB DATA interface Cable		
	2	Earphone Headset		
	3	AC Adapter		
	4	WLAN AP		
	5	Mini Memory Card with Diag. test program (need be encoded by HTC)	HTC design	
	6	mini SD memory card for ROM code re-flash (must be encoded by HTC)	HTC design	
	7	Y cable for ROM code re-flash and diagnostic test program	HTC special tools	RTT-00004
	8	USB SD card reader	(ZENITRON WFGMRSD-TP)	RTT-00005
	9	Diagnostic card for Diamond		DCT-00001
	9	Unit current consumption test fixture	HTC design	
	10	Power supply		
	11	Current Meter		
	12	Mobile tester		
L 2	13	Special Made Plastic Stick	HTC special tools	
	14	Hand tools		
	15	Navi Board to M/B assembly fixture	HTC design	RTT-00001
	16	LCD FPC to M/B assembly fixture	HTC design	RTT-00003
	17	Mylar for Navi keycap gap control(30x5xT0.15)		RTT-00011
	18	Mylar for Navi keycap gap control(30x10xT0.15)		RTT-00012
	19	Label printer		
L 2.5	18	Lead-free Soldering station		
	19	Air heater		

2.2 Disassembling procedure

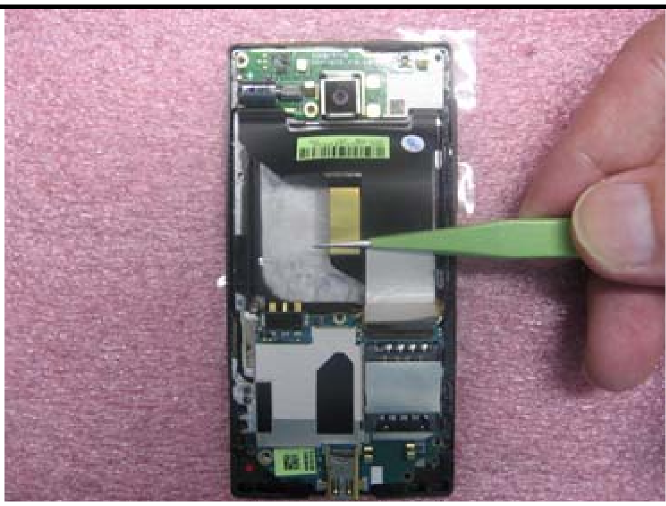
   	Tools needed for Assembling and Disassembling process. 1. Lens Cleaning Cloth. 2. Philips Screw Driver 000X40. 3. Flat Plastic Stick. 4. Plastic Tweezers. 5. Board to board connector assembly fxture
	Hold the thumbs on the top left and bottom right of the battery cover and slide it upwards and remove the battery cover
	Slide down the stylus

	REMOVE THE BATTERY
	UNFASTEN THE 3 SCREWS AT THE LOCATION INDICATED AND REMOVE THE ANTENNA COVER CAREFULLY
	UNFASTEN THE 3 SCREWS AT THE LOCATION INDICATED AND REMOVE THE SIM COVER CAREFULLY

	REMOVE THE CAP FROM THE ANTENNA COVER
	REMOVE THE SPEAKER CAUTION: AVOID DAMAGE THE SPEAKER
	UNFASTEN THE 2 SCREWS AT THE LOCATION INDICATED AND REMOVE THE STYLUS SUPPORTER

	REMOVE THE METAL COVER
	RELEASE THE HOOK OF CABLE COVER FROM THE HOUSING THEN SEPARATE THR GPS COXIAL CABLE FROM THE COVER THEN REMOVE THE COAXIAL CBLE COVER CAREFULLY
	REMOVE THE VOLUME BUTTON COVER

	REMOVE THE POWER BUTTON COVER
	REMOVE THE LCM FPC TAPE FROM THE CONNECTOR
 Loss the glue under backward  Remove the EMC tape and connector cover	LOOSE THE LCM FPC CABLE FROM THE CONNECTOR



Disconnect the FPC cable by using the tweezers and pull it with backward direction

DISCONNECT THE FPC CABLE BY USING TWEZEERS CAREFULLY

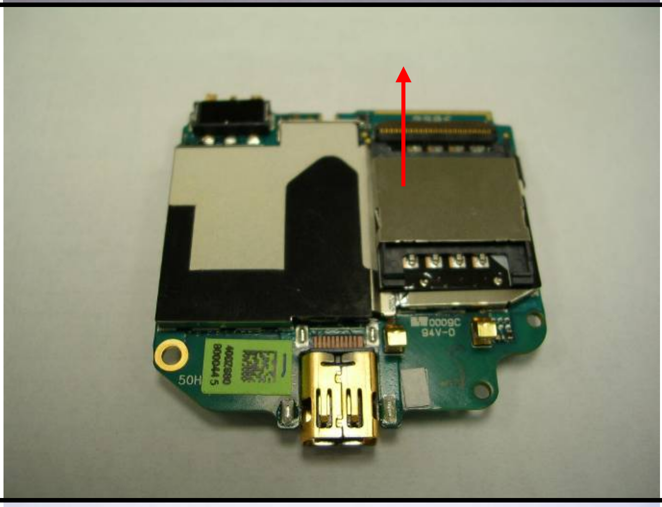
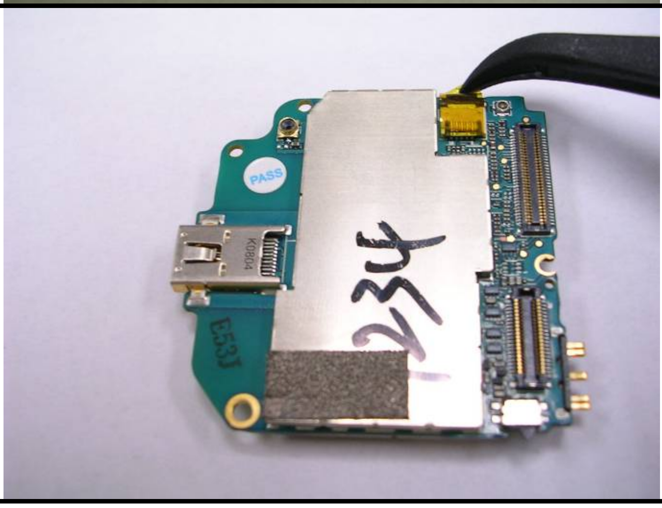


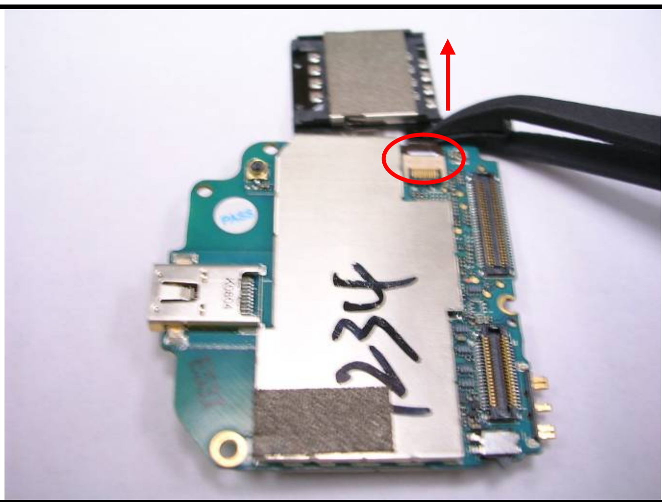
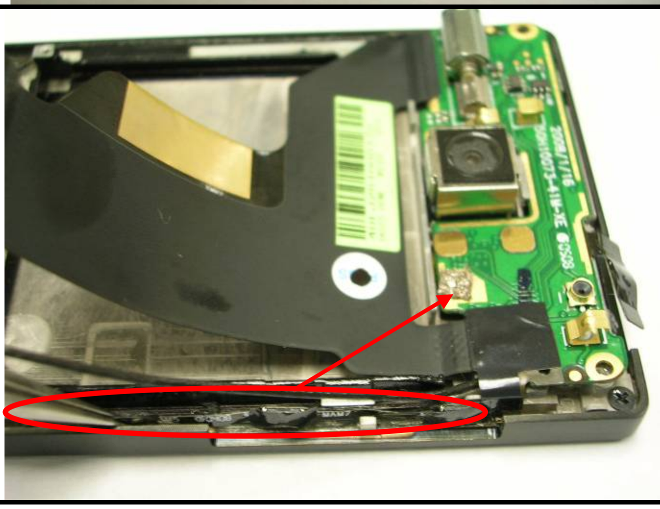


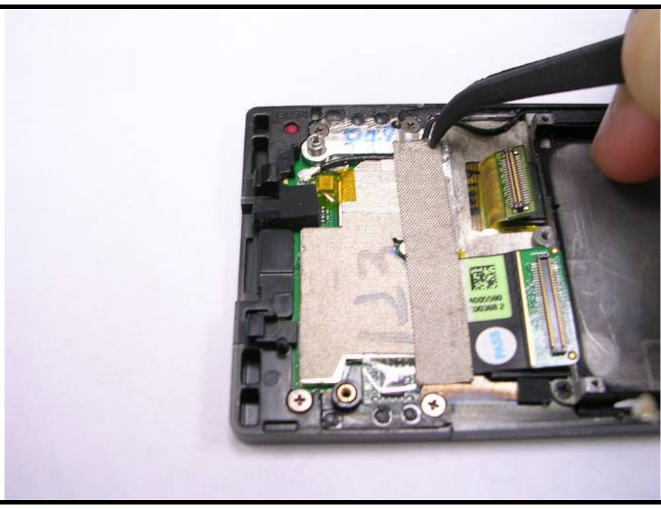
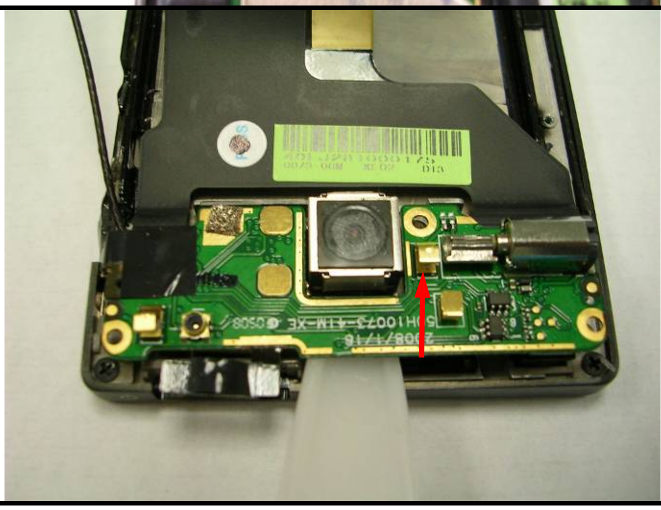
DISCONNECT THE LCM AND NAVI BOARD CONNECTOR FROM THE MAIN BOARD

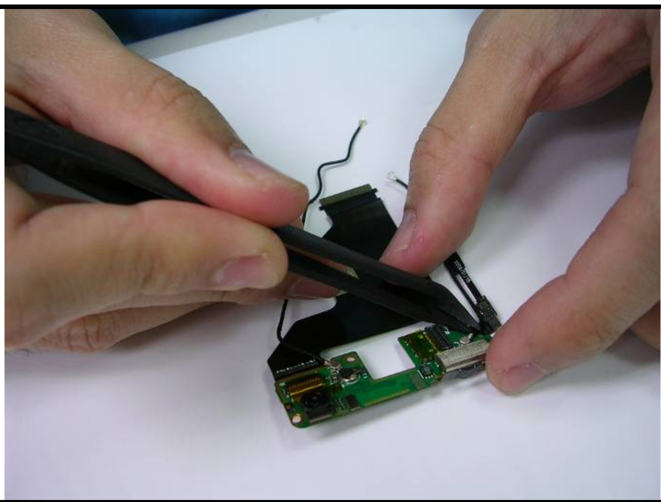
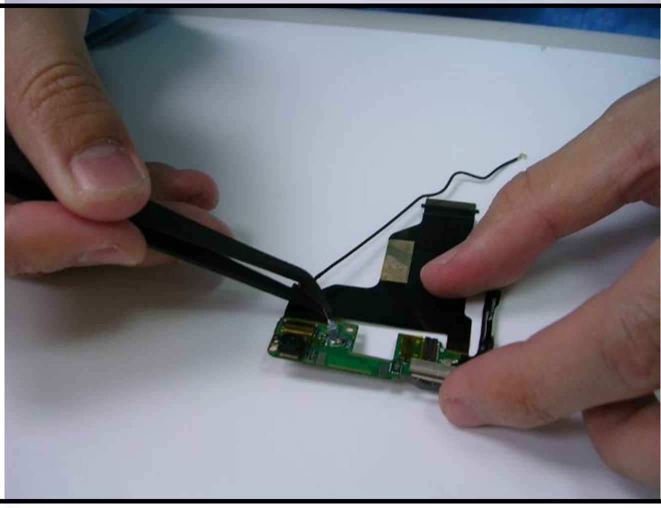
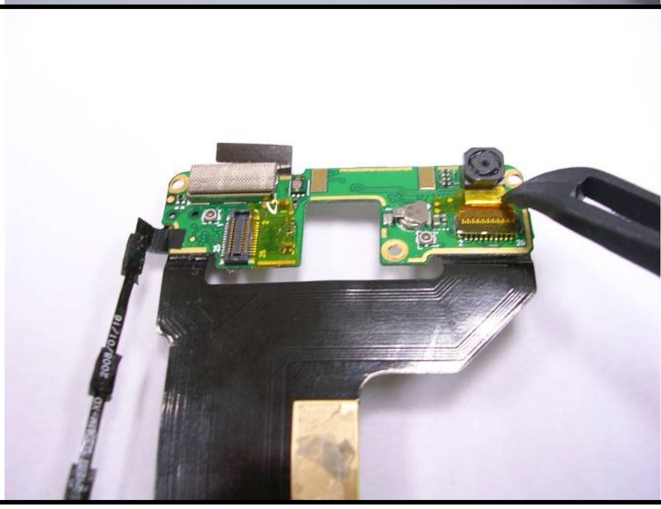


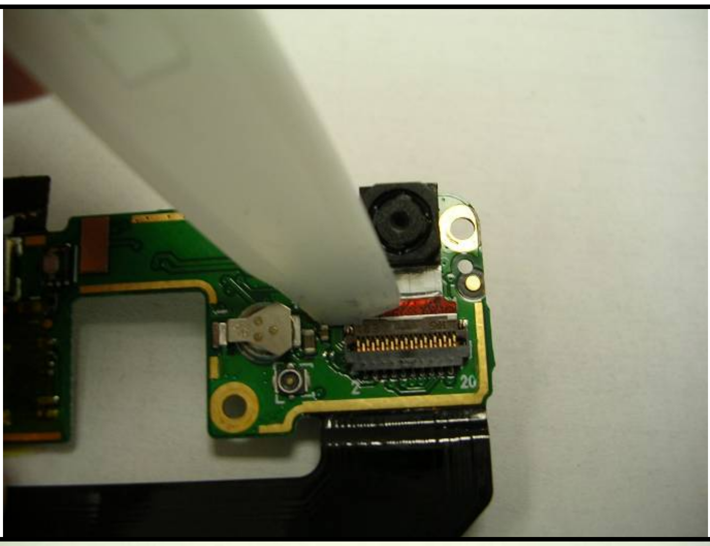
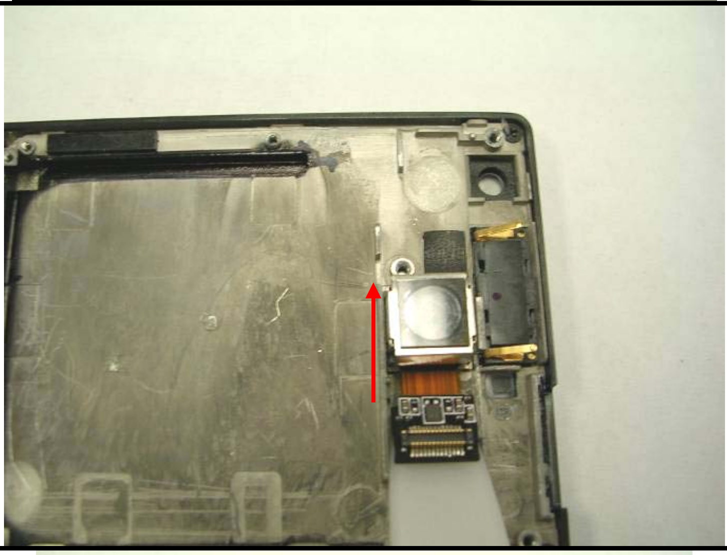
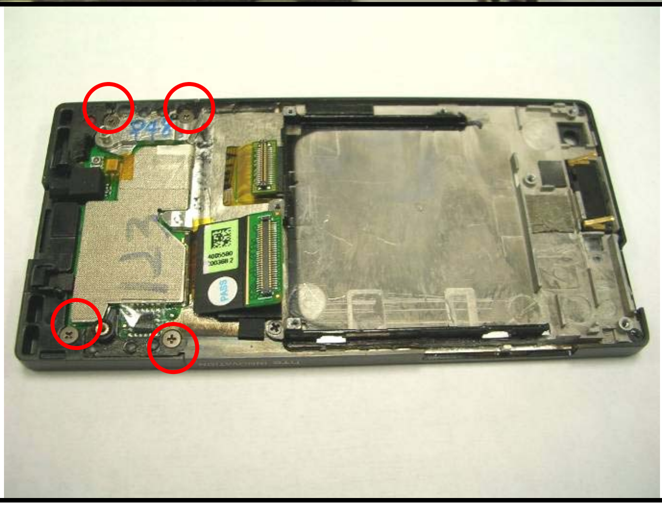
RELEASE THE HOOK AND TURN OVER THE MAIN BOARD

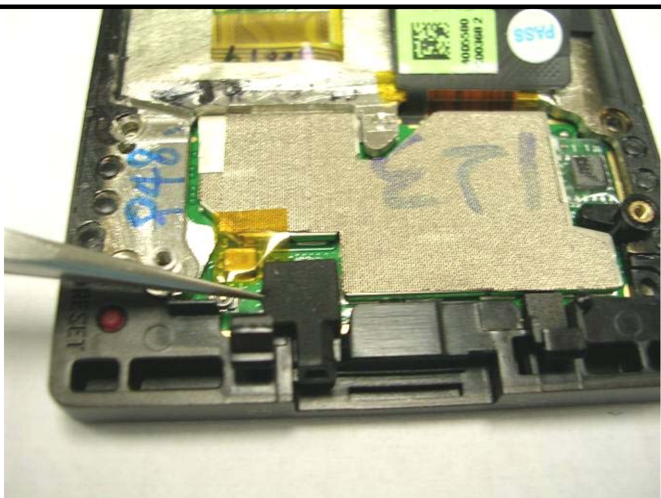
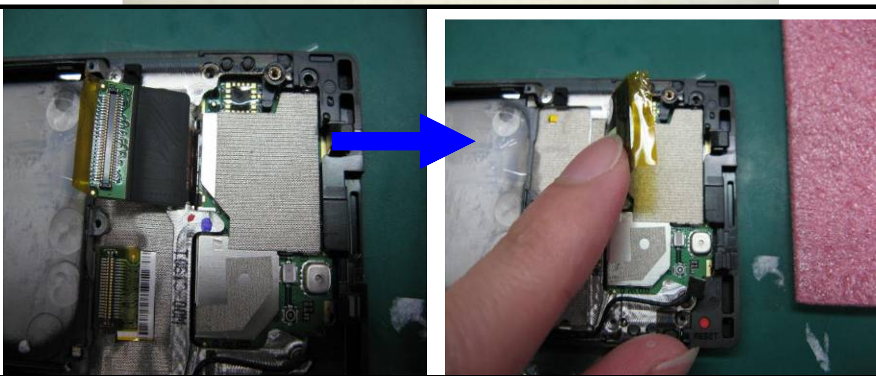
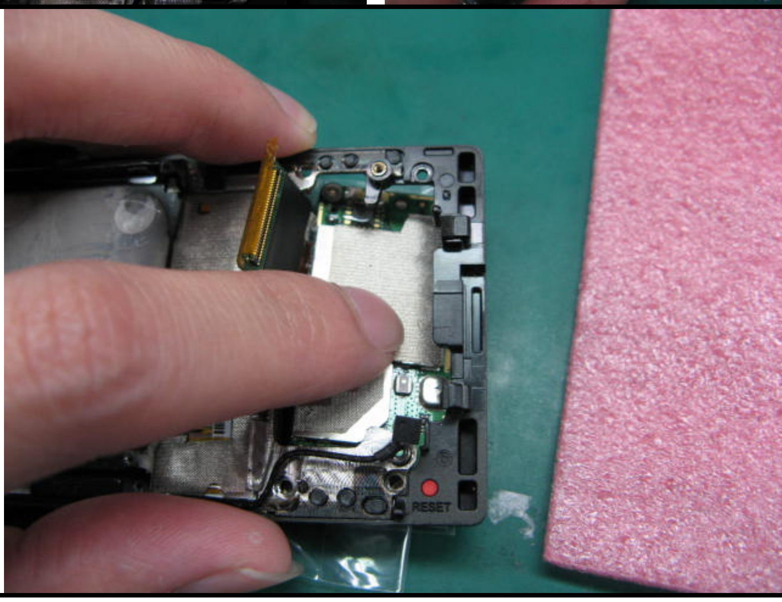
	DISCONNECT THE GPS COAXIAL CABLE FROM THE MAIN BOARD CAREFULLY **NOTE: DO NOT RE-USE THE BT/WIFI AND GPS COAXIAL CABLE WHEN YOU DISASSEMBLE THE COAXIAL CABLE. NEED TO CHANGE THE NEW COAXIAL CABLE**
	SEPARATE THE SIM FPC BOARD FROM THE MAIN BOARD THEN TURN IT OVER
	REMOVE THE TAPE FROM THE CONNECTOR

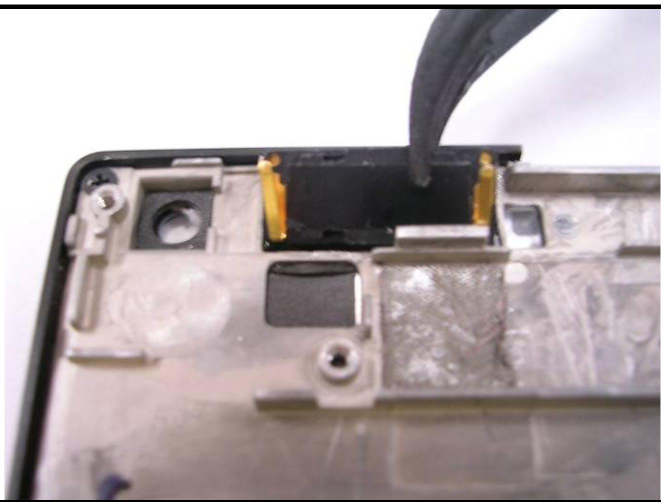
	REMOVE THE SIM FPC FROM THE MAIN BOARD CAREFULLY
	LOOSE THE POWER BUTTON CABLE FROM THR HOUSING CAREFULLY
	LOOSE THE VOLUME BUTTON CABLE FROM THE HOUSING CAREFULLY

	REMOVE THE GASKET TAPE
	DISCONNECT THE BT/WIFI COAXIAL CABLE FROM THE NAVI BOARD
	USE FLAT PLAASTIC STICK TO SLIP OUT THEN TAKE OUT THE RIGID FLEX BOARD FROM THE HOUSING CAREFULLY

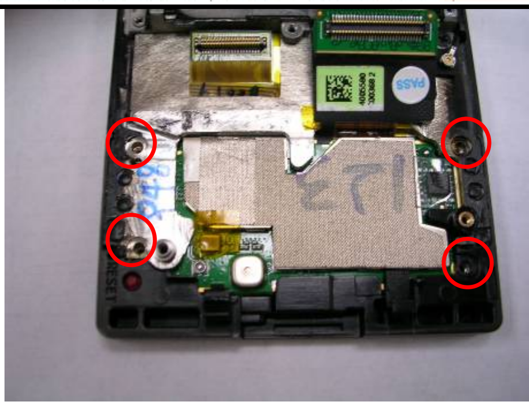
	DISCONNECT THE GPS COAXIAL CABLE FROM THE RIGID FLEX BOARD CAREFULLY
	DISCONNECT THE BT/WIFI COAXIAL CABEL FROM THE RIGID FLEX BOARD CAREFULLY
	REMOVE THE TAPE FROM THE CONNECTOR

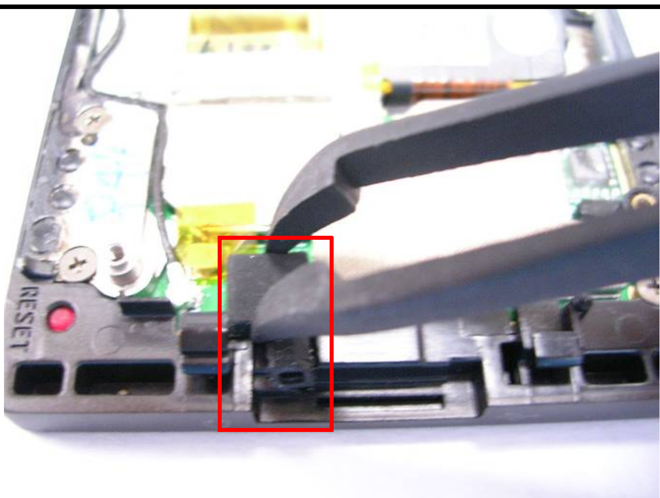
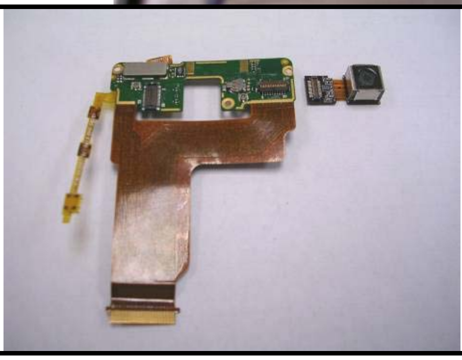
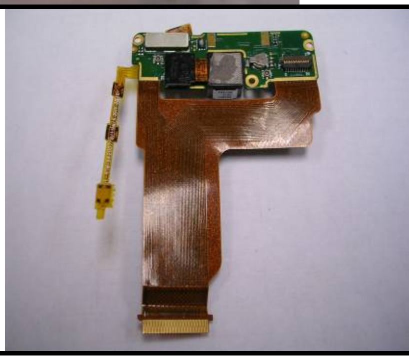
	LOOSE THE 2ND CAMERA CONNECTOR THEN REMOVE THE 2ND CAMERA MODULE FROM THE CONNECTOR CAREFULLY
	REMOVE THE MAIN CAMERA MODULE FROM THE HOUSING CAREFULLY
	REMOVE THE 4 SCREWS FROM THE HOUSING

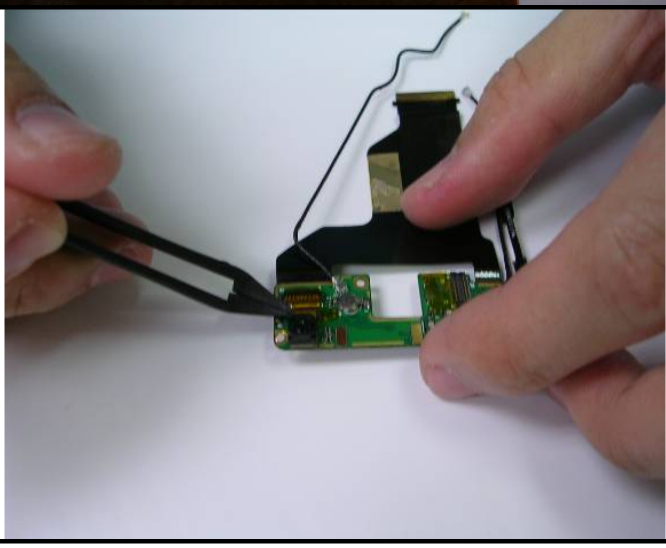
	REMOVE THE MICROPHONE RUBBER FROM THE NAVI BOARD
	BEFORE DISASSEMBLE THE NAVI MODULE PUSH THE FPC CABLE TO UPEER DIRECTION
	PRESS THE NAVI BOARD LIGHTLY TO PUSH DOWN FOR DISASSEMBLY

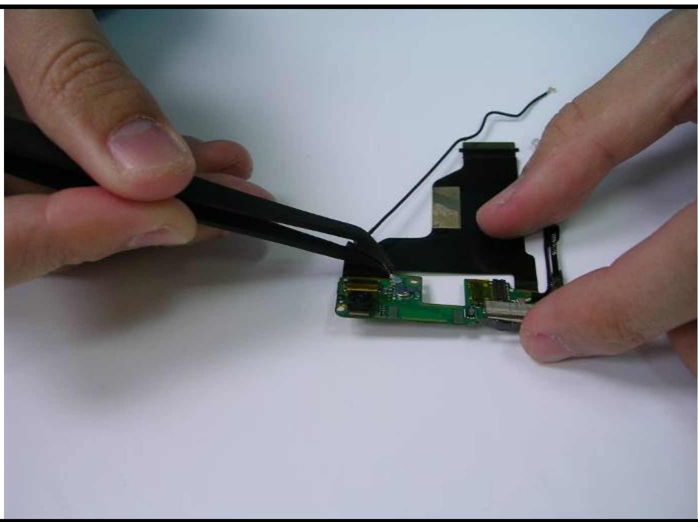
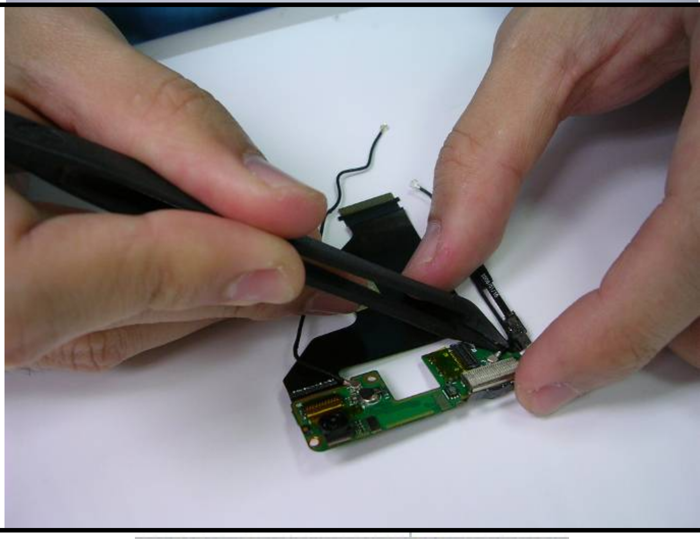
	REMOVE THE RECEIVER FROM THE HOUSING CAREFULLY
	**DISASSEMBLY COMPLETED!** **NOTE: DUE TO THE S/N LABEL HINDS THE BACKWARD OF BEZEL AND YOU CAN'T SEE THE SERIAL NUMBER. IT'S NO NEED TO FILL IN THE SERAIL NUMBER WHEN REPLACING THE DEFECTIVE T/P+LCD MODULE**

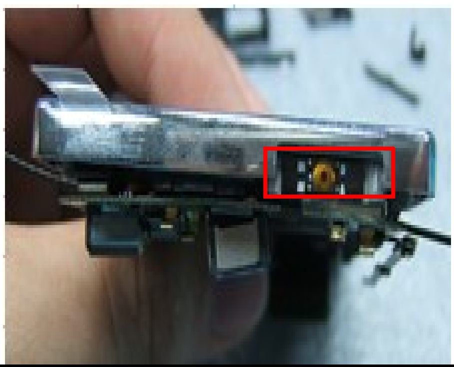
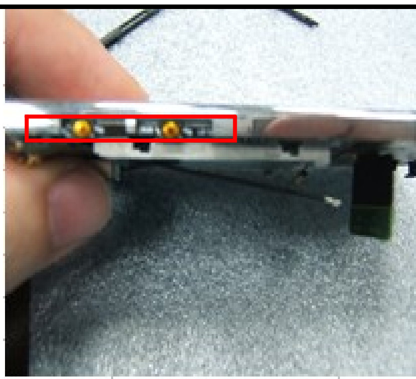
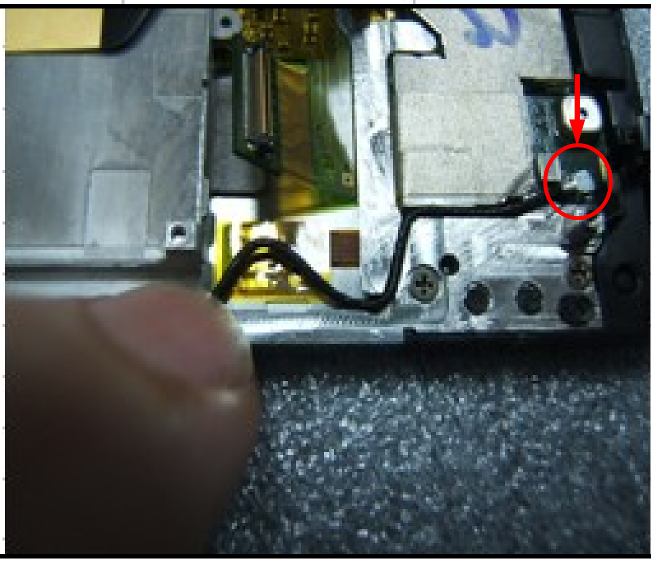
2.3 Assembling procedure

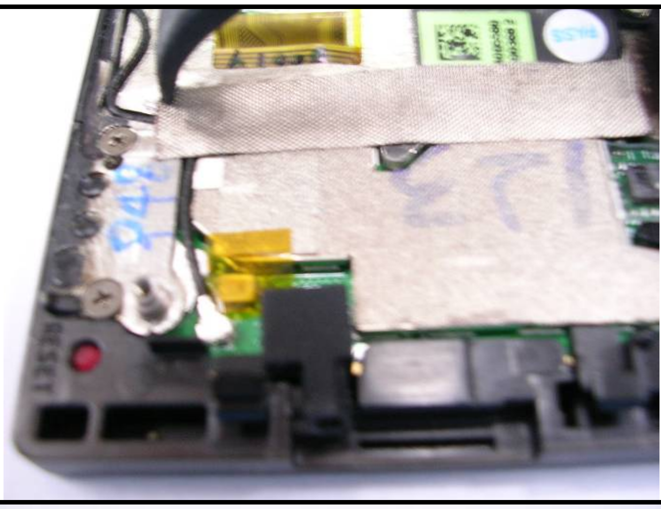
   	TOOLS NEEDED FOR ASSEMBLING AND DISASSEMBLING PROCESS. 1. LENS CLEANING CLOTH. 2. PHILIPS SCREW DRIVER 000X40. 3. FLAT PLASTIC STICK. 4. PLASTIC TWEEZERS. 5. BOARD TO BOARD CONNECTOR ASSEMBLY FXTURE
	INSERT THE NAVI BOARD MODULE INTO THE HOUSING
 	FASTEN THE 4 SCREWS AS INDICATED POSITION OF PICTURE TORQUE: 0.5 ± 0.1KGF-CM P/N: 72H02456-00M * 4

	ATTACH THE MICROPHONE RUBBER ON THE INDICATED POSITION OF NAVI BOARD
	ATTTACH THE RECEIVER INTO THE HOUSING CAREFULLY
 	ASSEMBLE THE MAIN CAMERA ODULE INTO THE RIGID FLEX BOARD

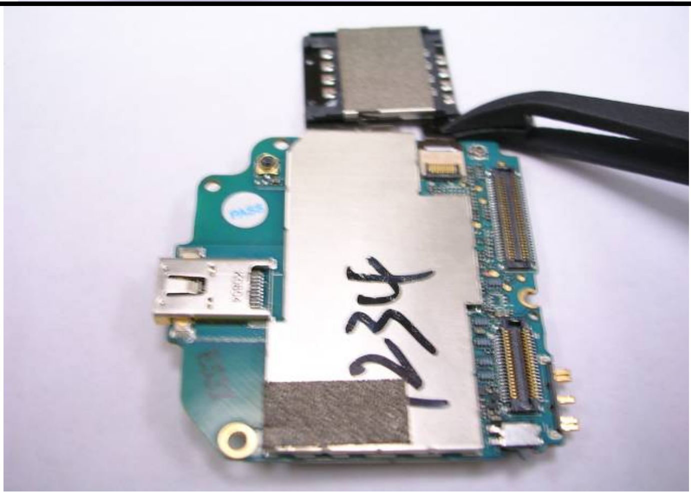
 	ASSEMBLE THE 2ND CAMERA MODULE INTO THE RIGID FLEX BOARD
	STICK THE TAPE ON THE CONNECTOR

	INSTALL THE WIFI/BT COAXIAL CABLE INTO THE RIGID FLEX BOARD
	INSTALL THE GPS COAXIAL CABLE INTO THE RIGID FLEX BOARD
	RIP THE TAPE OF MAIN CAMERA AND RIGID FLEX BOARD THEN ASSEMBLE THE RIGID FLEX BOARD ON THE FRAME

 	RIP THE TAPE OF POWER AND VOLUME SWITCH THEN STICK ON THE FRAME OF THE HOUSING
	PUSH THE BT/WIFI COAXIAL CABLE INTO THE FILLISTER OF THE FRONT BEZEL
	INSERT THE WIFI/BT COAXIAL CABLE INTO THE CONNECTOR OF NAVI BOARD

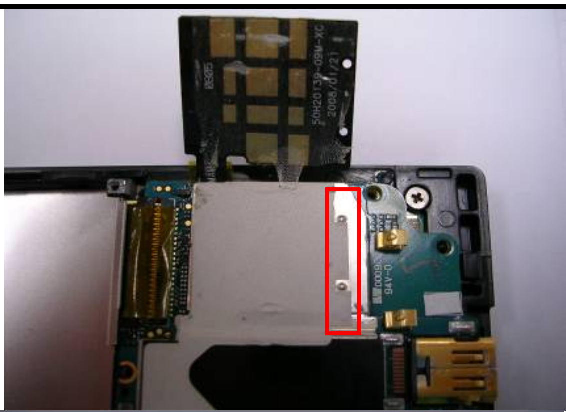
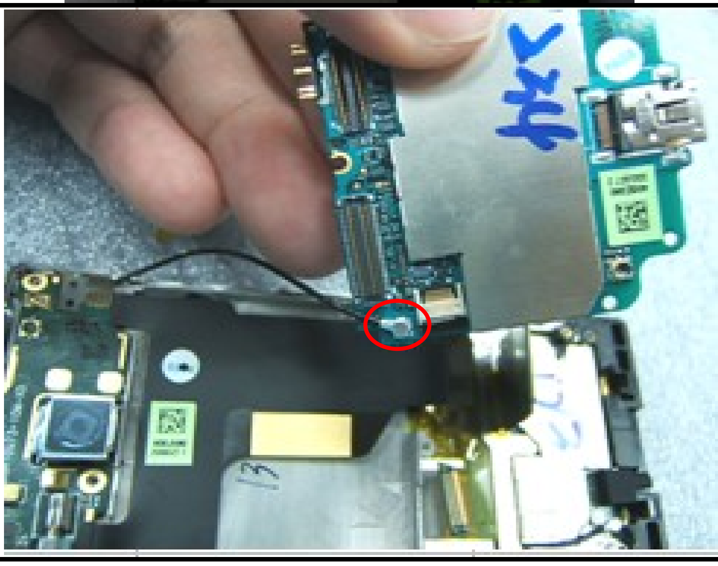


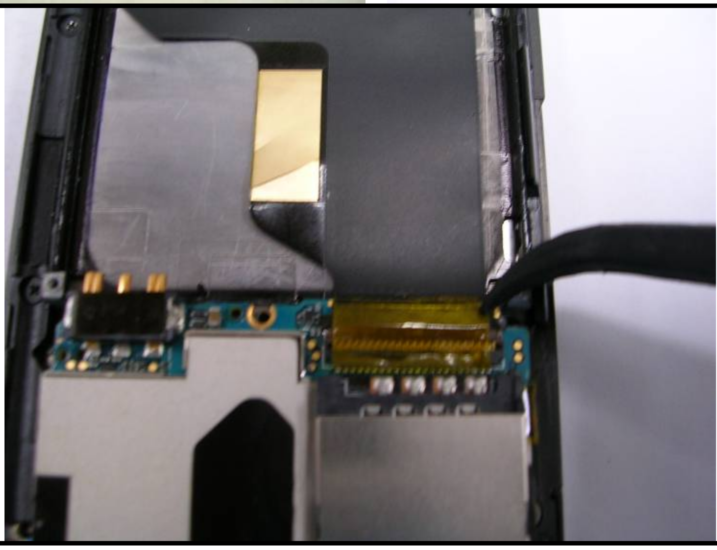
STICK THE GASKET TAPE ON THE FRONT BEZEL

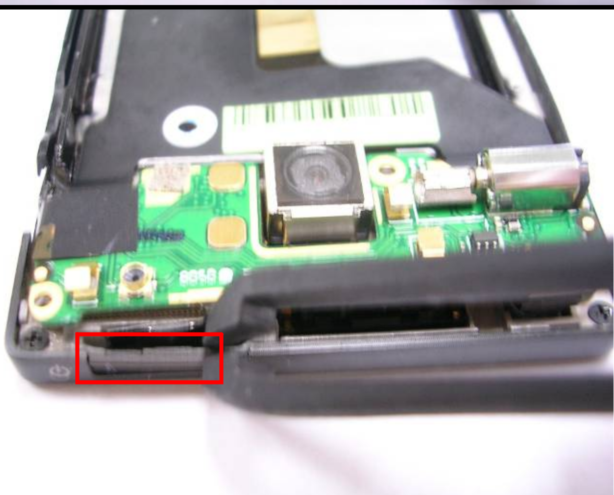


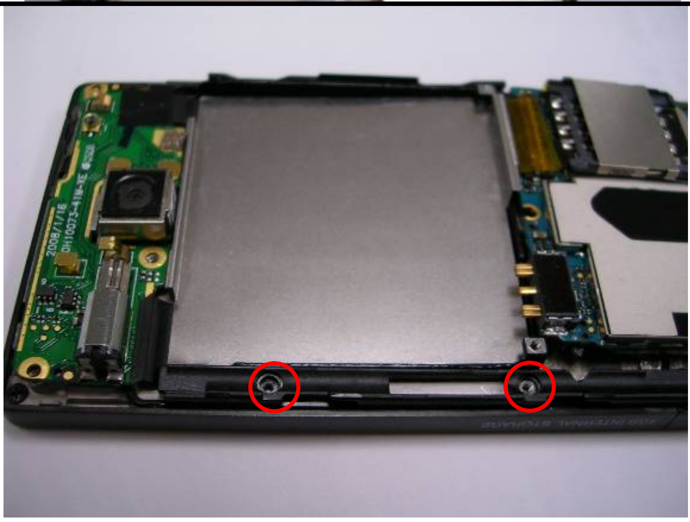


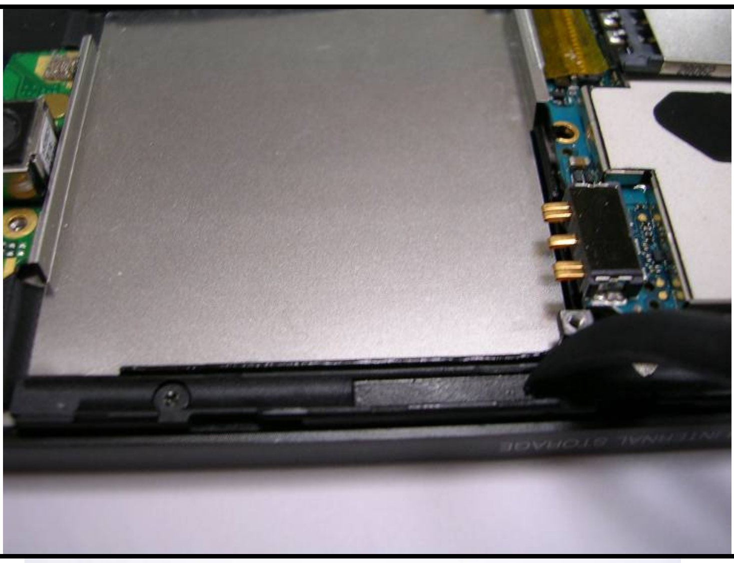
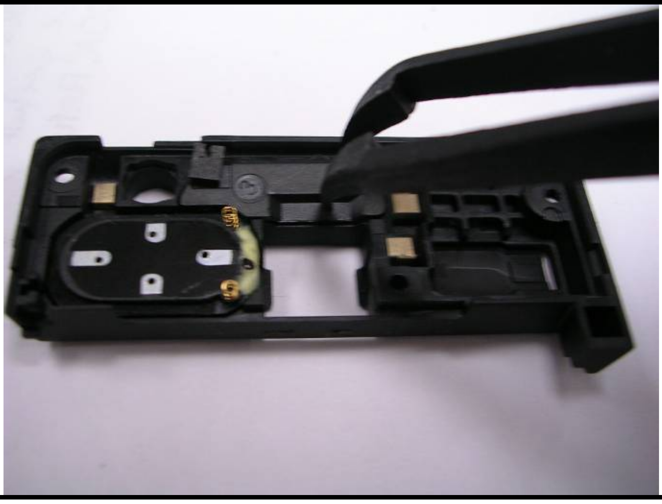
CONNECT THE SIM FPC BOARD INTO THE MAIN BOARD THEN STICK THE TAPE ON THE CONNECTOR

 	PUT DOWN THE SIM FPC BOARD BY ALIGNING THE 2 HOLES ONTO THE MAIN BOARD
	CONNECT THE GPS COAXIAL CABLE INTO THE MAIN BOARD THEN PUT THE MAIN BOARD ON THE HOUSING NOTE: MAKE SURE TO INSERT THE MAIN BOARD AND LOCK WITH THE HOOK

	
 	ASSEMBLE THE NAVI BOARD AND LCM FPC CONNECTORS BY USING ASSEMBLY FIXTURE
	ATTACH THE RIGID FLEX BOARD FPC CABLE INTO THE MAIN BOARD THEN STICK THE TAPE ON THE CONNECTOR

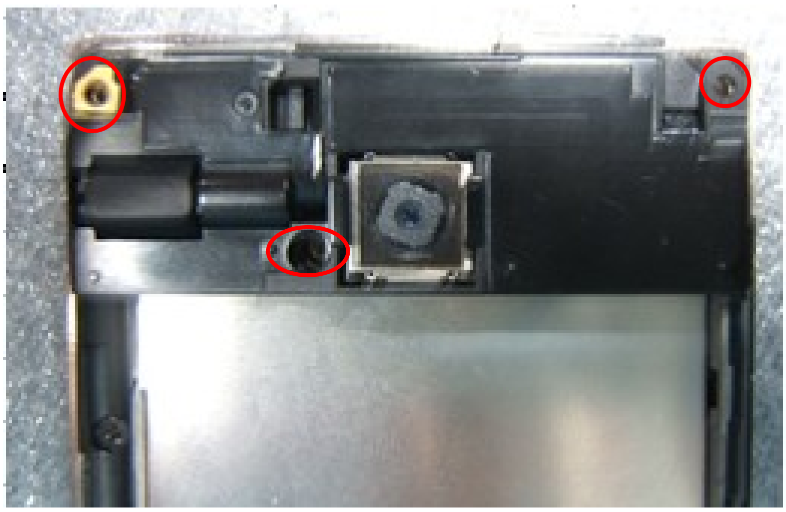
	ATTACH THE VOLUME BUTTON INTO THE HOUSING
	ATTACH THE GPS COAXIAL CABLE INTO THE SUPPORT COVER AND HOOK THE COVER INTO THE HOUSING
	ATTACH THE POWER BUTTON INTO THE HOUSING

	PLACE THE METAL COVER ON THE BACWARD OF THE FRONT COVER
 	ATTACH THE STYLUS SUPPOTER ONTO THE FRONT BEZEL AND FATEN THE 2 SCREWS TORQUE: 0.5 ± 0.1KGF-CM P/N: 72H02454-00M * 2

	ATTACH THE MAGNET INTO THE SLOT OF THE STYLUS SUPPORTER
	ATTACH THE SPEAKER INTO THE ANTENNA COVER ASSEMBLY
	ATTACH THE CAP INTO THE ANTENNA COVER ASSEMBLY




ATTACH THE ANTENNA COVER ONTO THE FRONT BEZEL





FASTEN THE 3 SCREWS INTO THE ANTENNA COVER

TORQUE: 0.9 ± 0.1KGF-CM
P/N: 72H02474-00M * 1
P/N: 72H02767-00M *2
(SILVER SCRTWS)







Attach the 5 screws into the SIM cover

Torque: 0.5 ± 0.1kgf-cm
P/N: 72H02668-00M * 2
P/N: 72H02474-00M * 3



Insert the battery into the unit

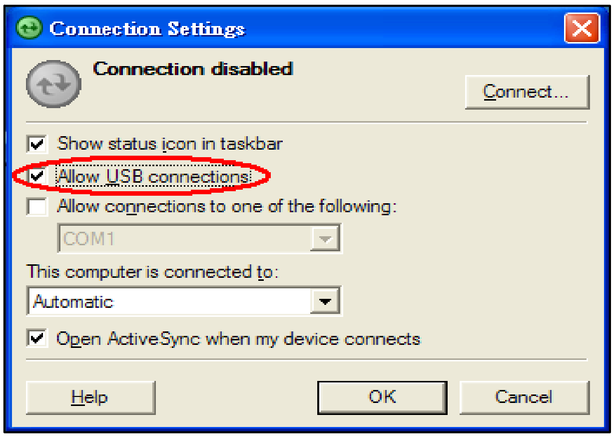
	INSERT THE BATTERY COVER
	INSERT THE STYLUS
	**ASSEMBLY COMPLETED!**

3. ROM Re-flash Procedure

3.1 ROM upgrade thru RUU (Re-flash Upgrade Utility)

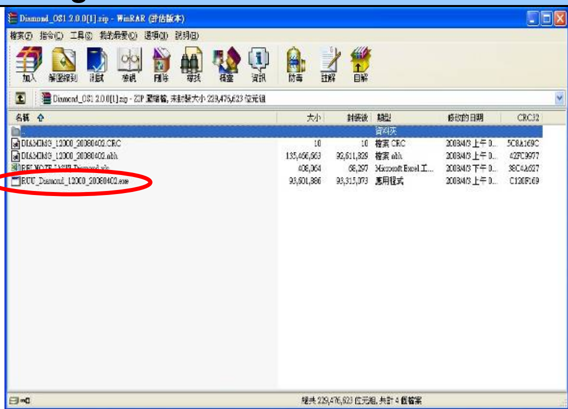
Connect device to PC

1. Setting and allow USB connections in Microsoft ActiveSync.
2. Connect your device and desktop/ or laptop via USB cable.
3. Check the pop-up message from Microsoft ActiveSync when device is synchronized with PC.



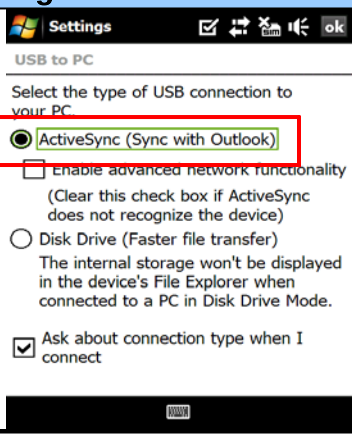
Download OS Image from SDO

4. Download OS image from SDO.
   http://htcscm10.htc.com.tw/SDO
5. Un-zip the file and execute RUU program.



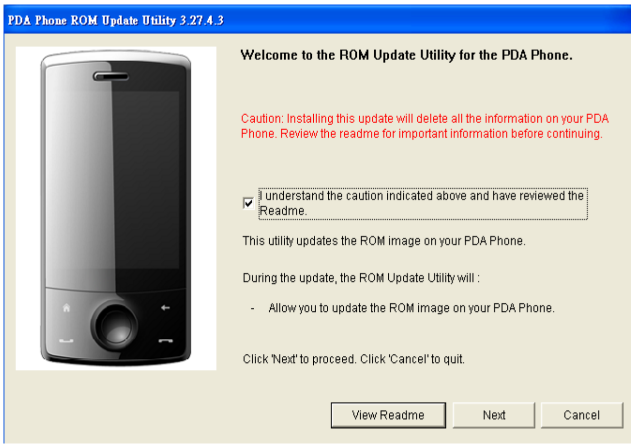
Check the setting of menu

6. Select the type of USB connection with "ActiveSync" mode in the settings of menu.



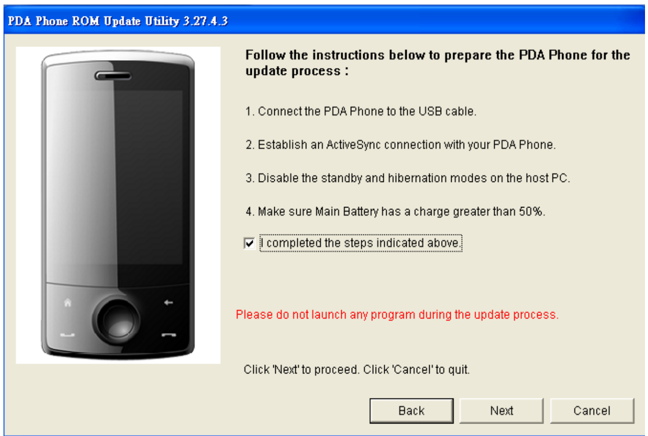
RUU-1

7. Hold the volume down key then press power button to trigger the boot loader mode.
8. Read the pop-up message form ROM update utility and select the “I understand…” checkbox.
9. Click “Next” to proceed.



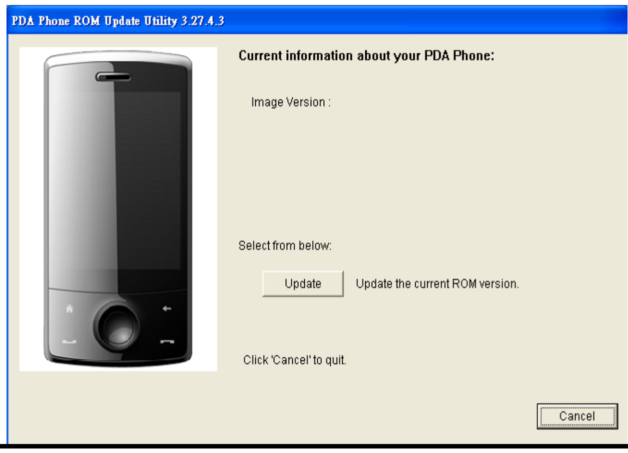
RUU-2

10. Read the pop-up message form ROM update utility to follow and perform the instructions and select the “I completed…” checkbox.
11. Click “Next” to proceed.



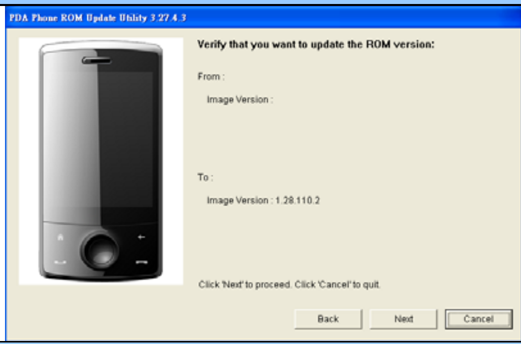
RUU – 3

12. Current image version confirmation.
13. Click “Update” to proceed



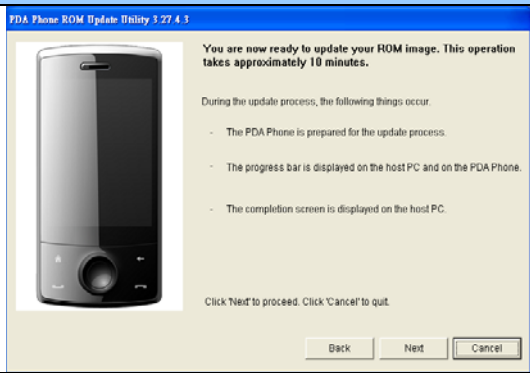
RUU-4

14. Double verify the ROM revision which you want to update before re-flash procedure.
15. Click “Next” to proceed.



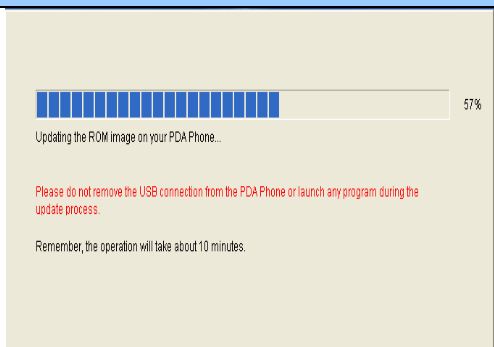
RUU-5

16. Read the information from pop-up message and the OS update procedure will takes 10 minutes long.
17. Click “Next” to proceed.



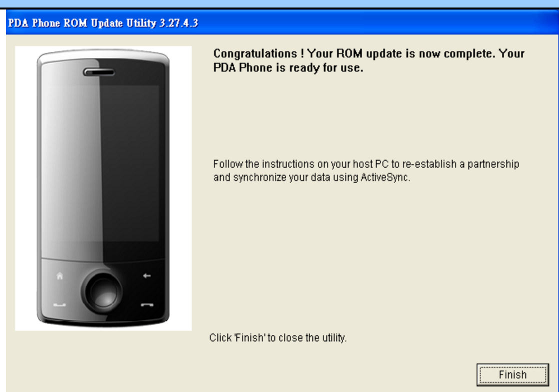
RUU – 6

18. You can see the update progress from your PC and in your device.



RUU – 7

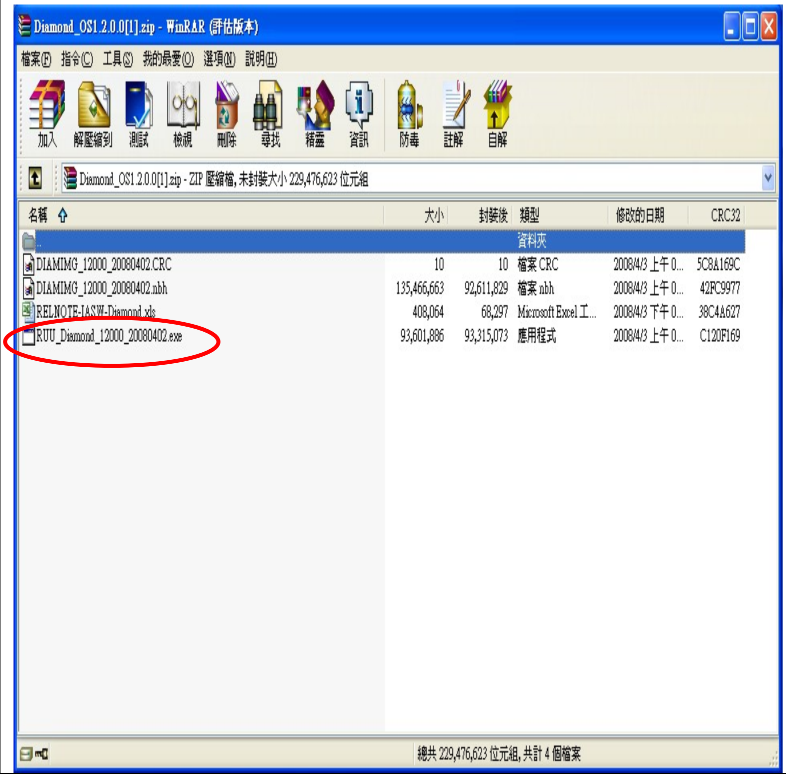
19. The OS upgrade is finished, click “Finish” to close the utility.



3.2 Rom Image upgrade thru SD card

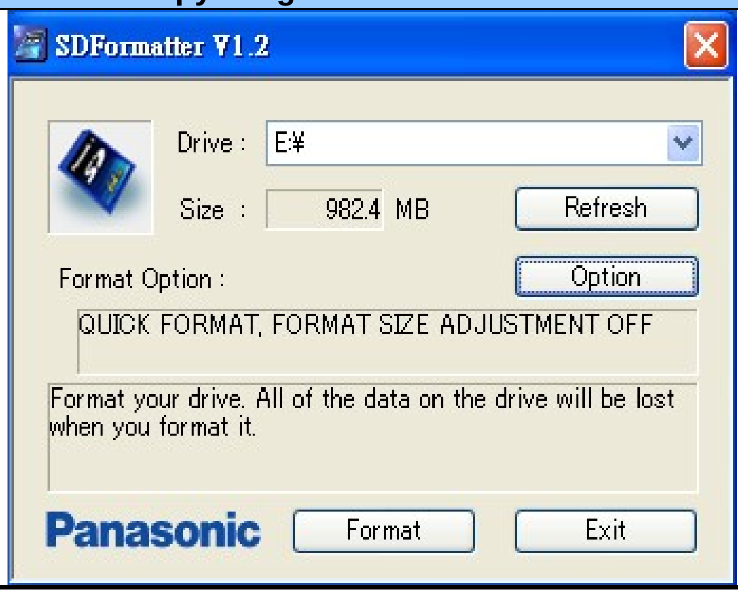
Download OS Image from SDO

1. Download OS image from SDO.
   http://htcscm10.htc.com.tw/SDO
2. Un-zip the image file.



Format SD card and copy image file to SD card

3. Select file system and format the SD card to FAT32 mode.
4. Copy image file XXX.nbh to the micro SD card and rename to **DIAMIMG.NBH**.



SD Upgrade - 1

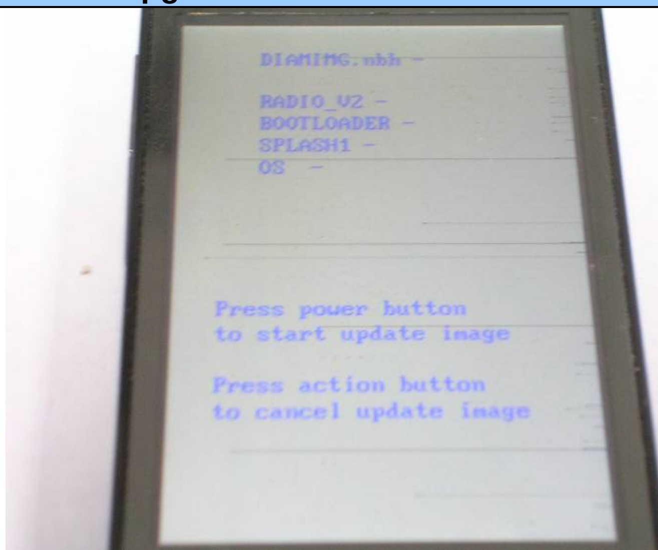
Note: The display with line of diagnostic mode is normal due to it is reliability issue for VGA resolution.

5. Connect the USB Y cable into the unit.
6. Connect the card reader and AC adapter into the USB Y cable.



SD Upgrade - 2

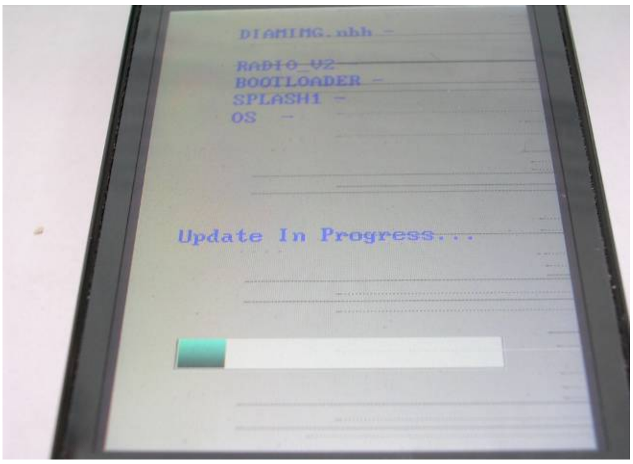
7. Turn the device power off and insert Diagnostic SD card.
8. Press and hold **Volume down**+ **Right** button, and press **Power** button to entry Boot loader mode.
9. Press **Power** button to start upgrade procedure.

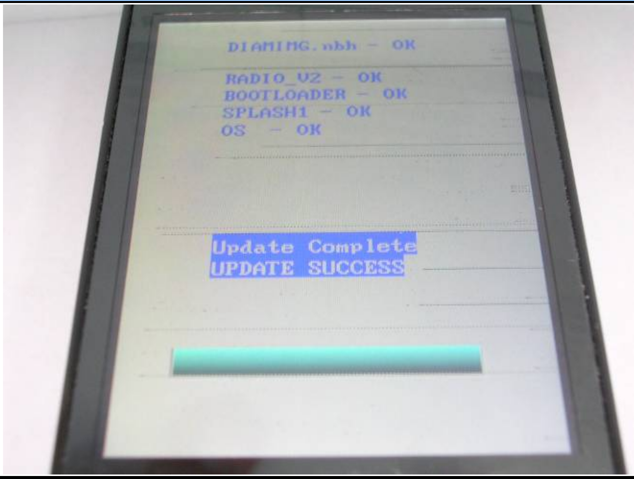


SD Upgrade - 3

10. Reading source code from SD card.

[Note]: This process will takes 10 minutes, please don't power off the device.



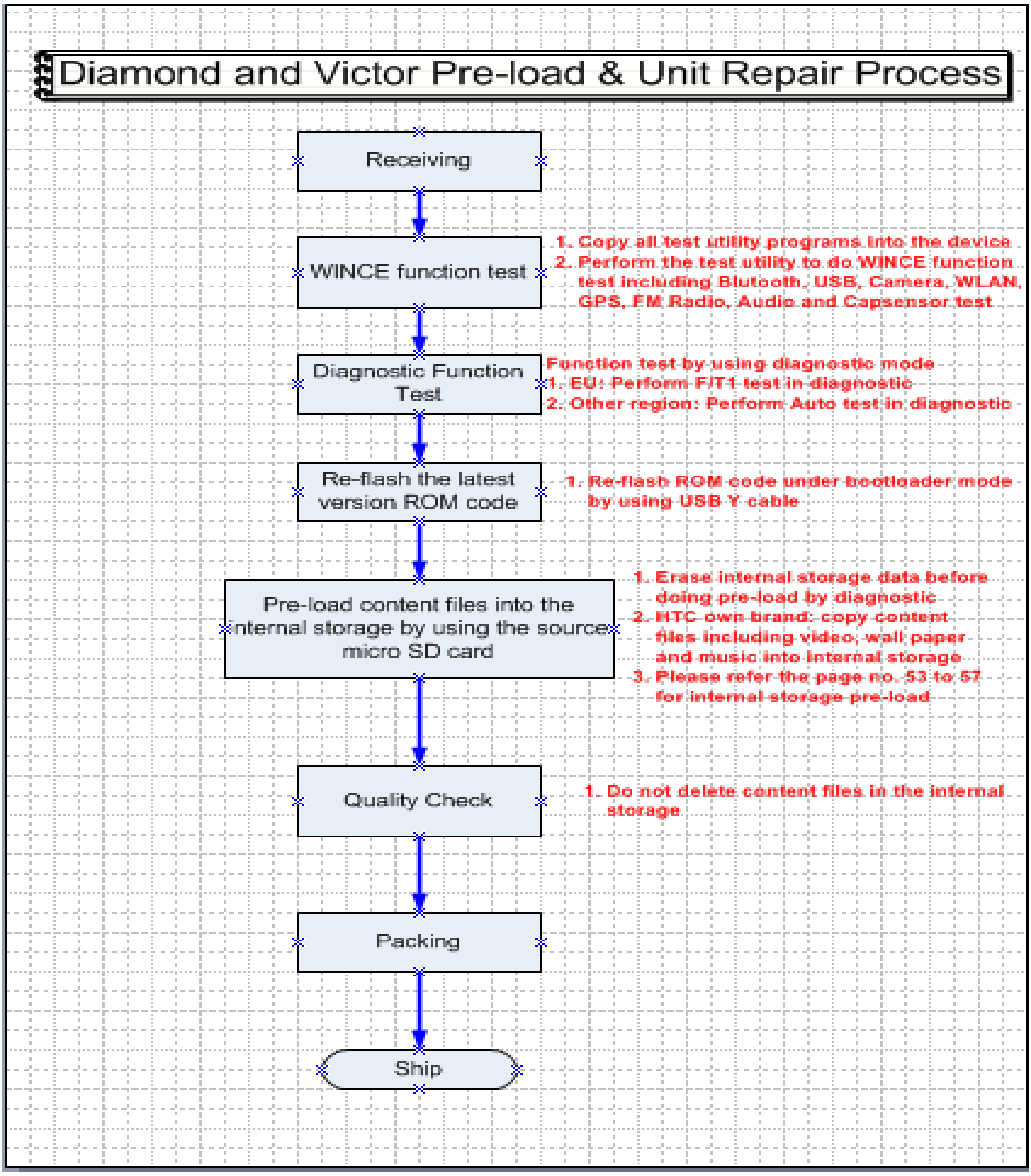
SD Upgrade - 4	
11. After finish, press Reset button to reboot.	

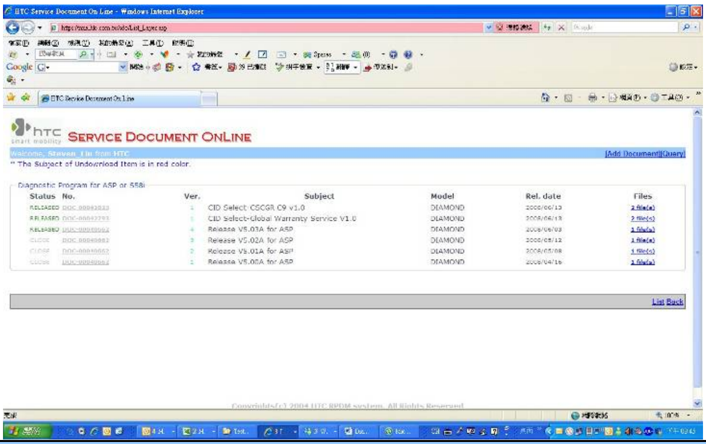
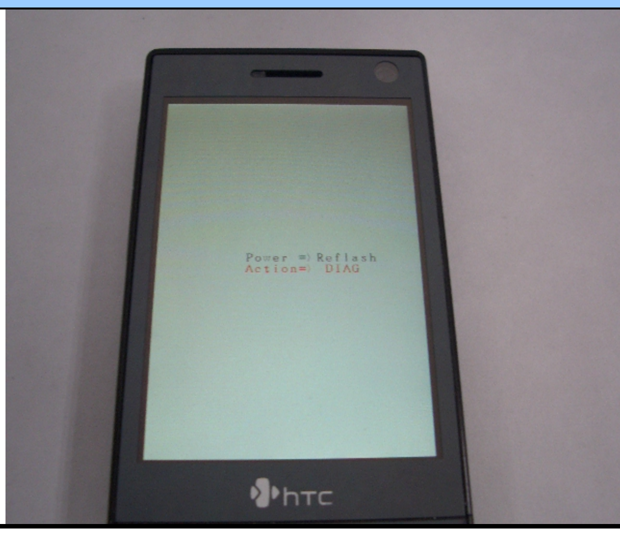
4. DIAGNOSTIC PROGRAM

4.1 List of Diagnostic / WinCE Test Items

Mode	No	Item	Description	Remark
	Function Test			
Diagnostic	1	Auto	Auto Regular Tests (Display, B.L, Vibrator, etc…)	
	2	ROM Checksum Test	ROM size	
	3	Stylus Detect Test	Stylus remove and insert	
	4	LED Test	Backlight of Navi board module	
	5	Display Test	Color bar/R/G/B/Black/White/Gray pattern.	
	6	LCD Back Light Test	LCD back light test (On/Dim/Off).	
	7	Vibrator Test	Vibrator on test.	
	8	Key Test	Power, Volume up, Volume down, Key action, Key left, Key up, Key right, Key down	
	9	G Sensor Test	Motion G sensor function test	
	Run-in Test			
	1	1 Hour	1 Hour Run-in Test/Press Soft1 key.	Option
	2	2 Hours	2 Hours Run-in Test/Press Soft 2 key.	Option
	3	4 Hours	4 Hours Run-in Test/Press Start key.	Option
	4	8 Hours	8 Hours Run-in Test/Press OK key.	Option
	Format Internal Storage (Personal information, talk times)			
	Device Info			
Win CE	1	Bluetooth Test	Bluetooth Function Test	
	2	USB Test	USB link test (Microsoft ActiveSync)	
	3	Camera Test	Camera Function Test	
	4	WLAN Test	WLAN Function Test	
	5	GPS Test	GPS Function Test	
	6	FM Radio	FM Radio Function Test	
	7	Audio Test	All Audio Function Test	
	8	Cap Sensor Test	Navi Cap Sensor Function Test	

Unit Repair Process



Pre-load Process-1	
1. Download diagnostic program from SDO (DOC-00040662). http://htcscm10.htc.com.tw/SDO	
Pre-load Process-2	
Note: The display with line of diagnostic mode is normal due to it is reliability issue for VGA resolution. 2. Copy the diagnostic and ROM code into the source mater card 3. Connect the USB Y cable into the unit. 4. Connect the card reader and AC adapter into the USB Y cable.	
Pre-load Process-3	
5. Turn the device power off and insert Diagnostic SD card into the USB card reader. 6. Press and hold **Volume down** + **Right** button and press **Power** button then enter Diagnostic mode. 7. Press “Action” key to enter Diagnostic mode.	

Pre-load Process-4

8. Press action key to select Content Tool for content files restore.



Pre-load Process-5

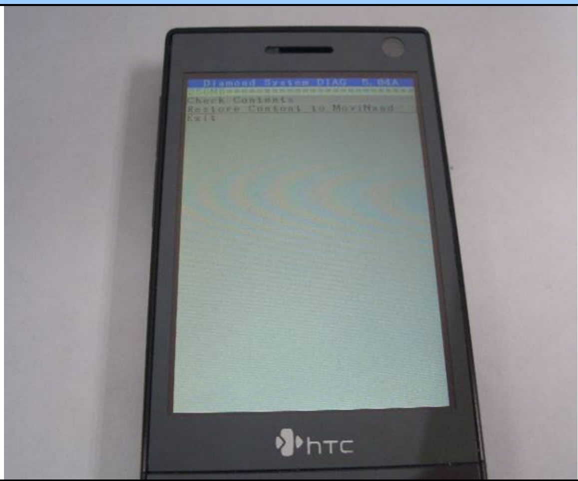
9. Press action key to select Check Contents before doing the file pre-load.



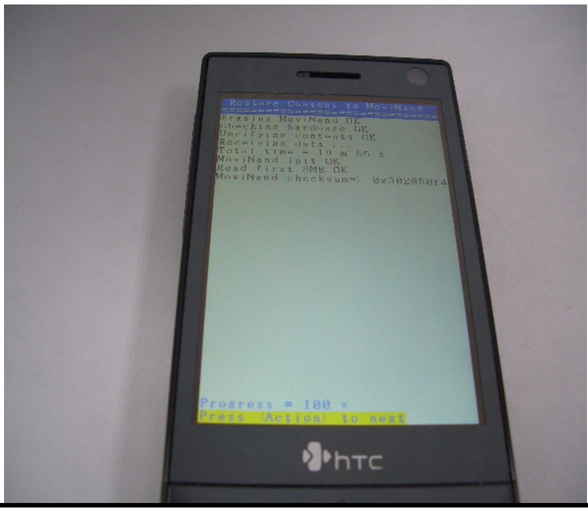
Pre-load Process-6

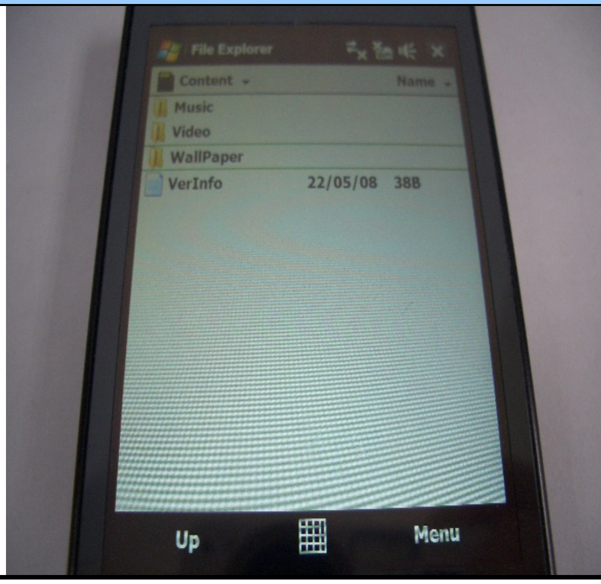
10. Confirm the checking result and shows on the screen.



Pre-load Process-7	
11. Press action key to select Restore Content to MoviNAND	

Pre-load Process-8	
12. It will restore content files into internal storage automatically.	

Pre-load Process-9	
13. It shows the checksum and total time after finishing the content files restore.	

Pre-load Process-10	
14. Reboot the device then enter OS to check the content files in the internal storage.	

Pre-load Table

Pre-load the all files into the internal storage.

Diamond	**Pre-load files**	**Folder Name**
Music	Yes	White Denim
		CoCo B's
		Bethurum
		Bad Viens
		Absolute Madman
Wall Paper	Yes	wallpaper_facet
		wallpaper_flames
		wallpaper_flower
		wallpaper_leaf
		wallpaper_ocean
		Wallpaper_pink
		wallpaper_pinkflower
Demo Video	Yes	Touch_Diamond_GettingStarted.3gp

WinCE Test

Bluetooth Test - 1

1. Tap icon Comm Manager on the Today screen and turn on Bluetooth.
2. Tap the icon "Settings" down-right the corner of the screen and select the "Make this device…." Checkbox.
3. Press Action key (Jog-ball) to go next test pattern.

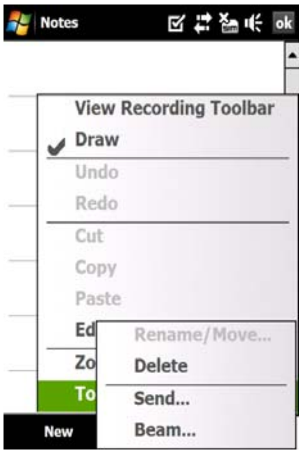




Bluetooth Test-2

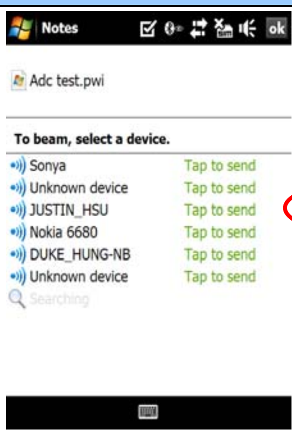
4. Tap Start->Settings->Connections->Beam and select "Receive all…." Checkbox.
5. To create a file, tap Start->Programs ->Notes->New
6. Tap and select the "Beam file…"

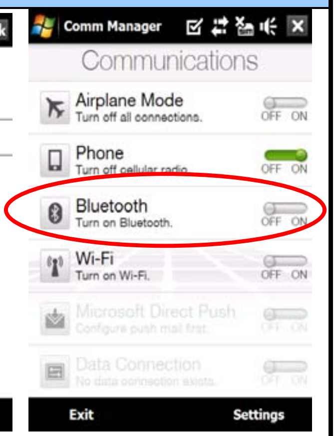




Bluetooth Test-3

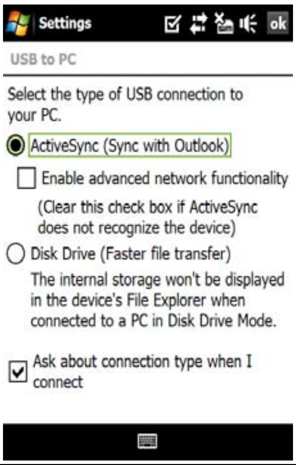
7. Once device is searched, tap the device to send the file.
8. Return to Today screen and tap Start->Program->Comm Manager ->Bluetooth to turn off Bluetooth.





USB Test

1. Start up the Microsoft® ActiveSync®program in the PC.
2. Select ActiveSync in the setting of menu
3. Insert USB cable and connect unit to desktop/ or laptop.
4. The USB to PC icon -> is appears on the Today screen when your device is connected to your desktop/ or laptop.





Camera Test

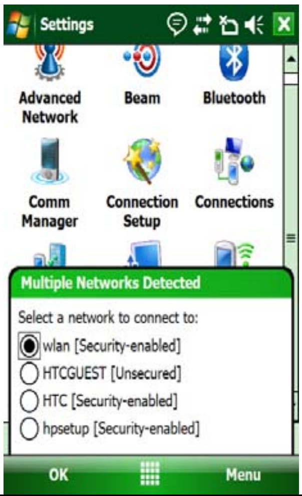
1. Tap Start->Program->Camera or Press Camera button to turn on the Camera.
2. Make sure the device will present and enter the preview display.
3. Check camera pre-view and image quality.





WLAN Test

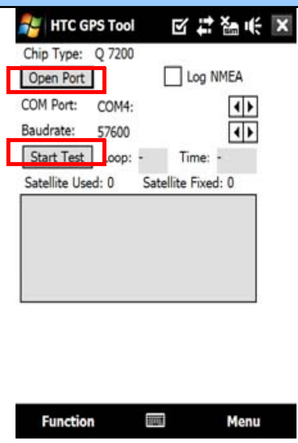
1. Tap icon Comm Manager on the Today screen and turn on WLAN.
2. Select the hot-spot/ or access point which searchable and appears on screen.
3. Once the hot-spot (access point) is connected, press the IE button and logon Internet.

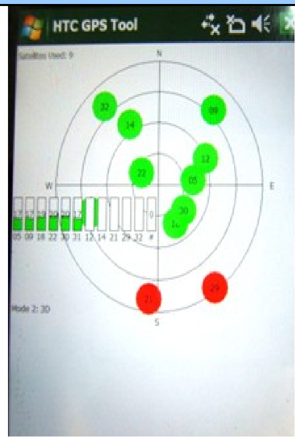




GPS Test

15. Download test program from SDO (DOC-00042190) http://htcscm10.htc.com.tw/SDO
16. Setup the COM port to COM4.
17. Place device in GPS receptor coverage area and tap the icon "Open GPS".
18. Check the GPS status as picture shown.

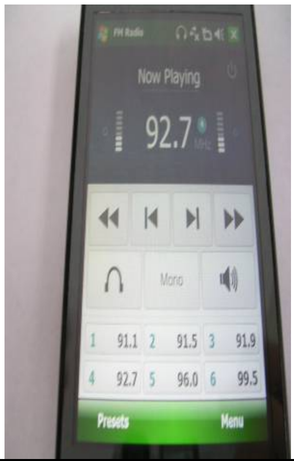




FM Radio Test

1. Insert the headset into the USB connector before doing the testing.
2. Tap icon FM Radio in the programs of the menu.
3. Select the different channels for testing.

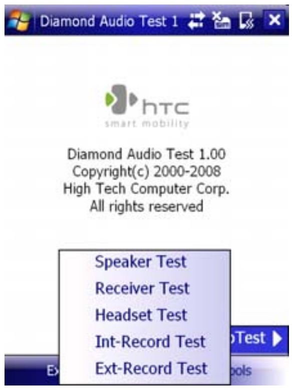




Audio Test-1

1. Download test program from SDO (GSD-00004973) http://htcscm10.htc.com.tw/SDO
2. Un-zip the image file.
3. Copy “mfgtest.dll” and “Audio Test.exe” to internal storage.
4. Execute ”Audio Test” program from internal storage.
5. Choose the each test in the menu of “Tools”





Audio Test-2

6. Select the Speaker Test then press Play button for testing

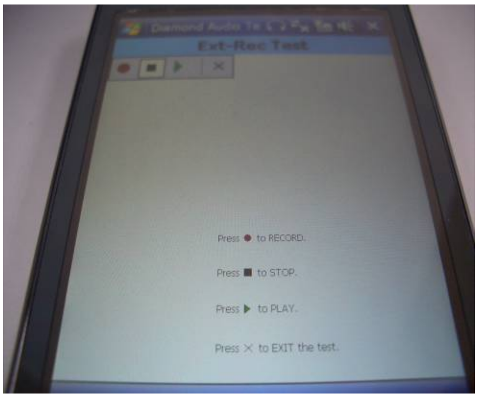


Audio Test-3

7. Select the Speaker Test then press Play button for testing	
Audio Test-4	
8. Connect the headset into the USB port before doing the testing 9. Select the Headset Test then press Play button for testing	
Audio Test-5	
10. Select the Int-Rec Test then press the "Record" button for voice recording first 11. Stop the voice record then press "Play" button for internal receiver test	

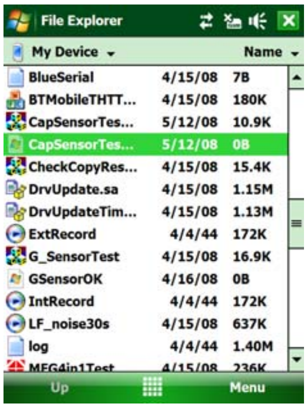
Audio Test-6

12. Connect the headset into the USB port before doing the testing
13. Select the Ext-Rec Test then press the "Record" button for voice recording first



Cap Sensor Test-1

1. Install CapSensorTest tool to device.
2. Execute the test tool.



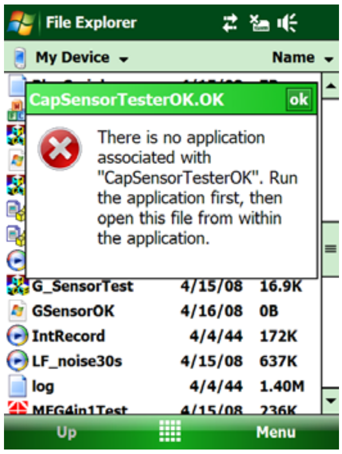


Cap Sensor Test-2

3. Light touch the surface of keycap and press down the Navi key.
4. The program will exist automatically once the function is normal.



Cap Sensor Test-3

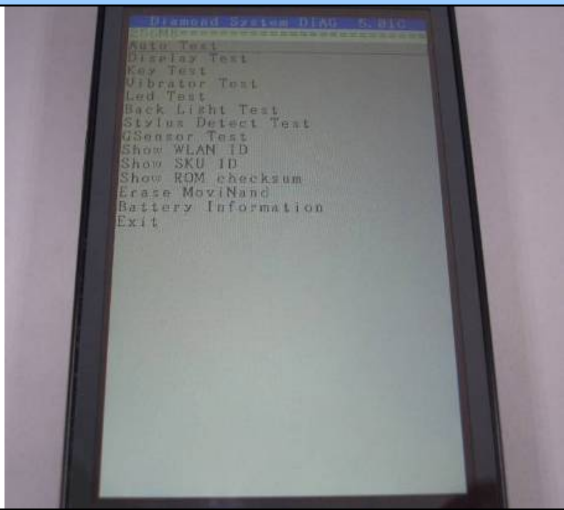
5. Find the "CapSensorTestOK" log file in the folder and it means cap sensor function pass.	

Test Procedure

How to select test item: Using navigation button -"Up" or "Down" to select the test items

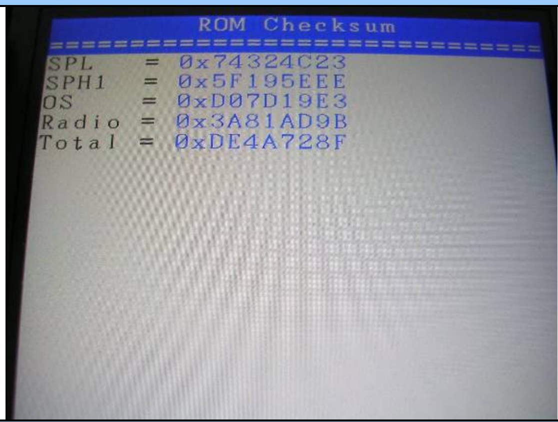
How to execute the test program: Press “Action” button to start each of test items.

Diagnostic

Main Menu/Function Test Menu	
1. Turn the device power off and insert Diagnostic SD card into the USB card reader. 2. Press and hold **Volume down** + **Right** button and press **Power** button then enter Diagnostic mode. 3. Using to select the test item and move to next page as well. 4. Select item “Function Test” to find the Function test menu.	
Auto Test	
5. Press the Action key to start the Auto-test. 6. It will perform the regular tests, please follow the system instruction to do the test.	

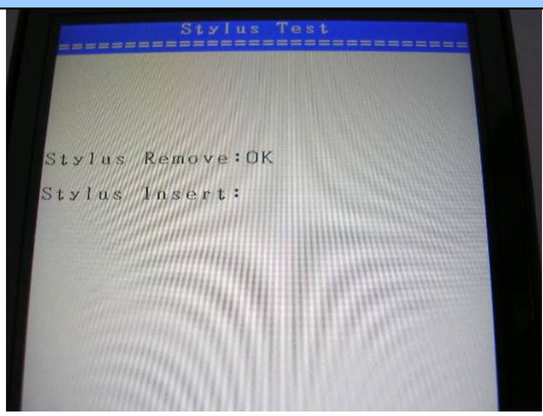
ROM Checksum Test

7. Press Action key to select
8. The Rom Checksum will be displayed on the screen



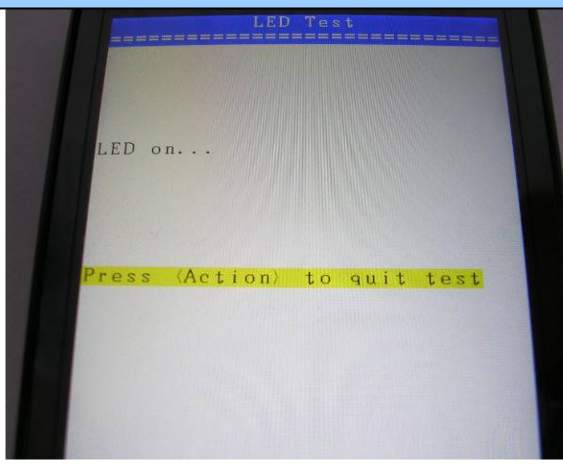
Stylus Detect Test

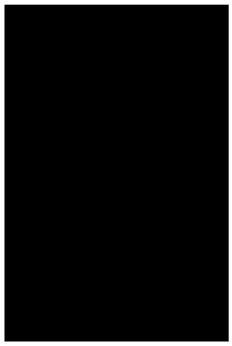
9. Press Action key to select
10. It will perform the stylus test, please follow the system instruction to remove and insert the stylus.



LED Test

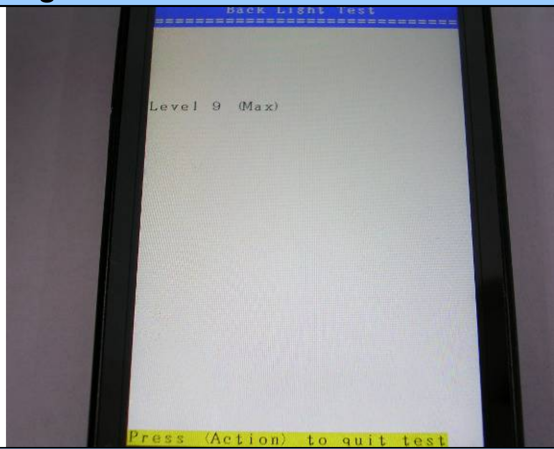
11. Press Action key to select
12. It will perform the LED test, please follow the system instruction to remove and insert the stylus.



Display Test (and RED/ GREEN pattern)	
13. Press Action key to select <u>Display Test</u> on Function test menu. 14. After the test pattern is show up, please check the pattern if any un-uniform color or chromatist. 15. Press Action key to continue the next test pattern.	 
Display Test (BLUE/ BLACK pattern)	
16. Press Action key to continue the next test pattern.	 
Display Test (WHITE/Color bar pattern)	
17. Press Action key to continue the next test pattern.	 

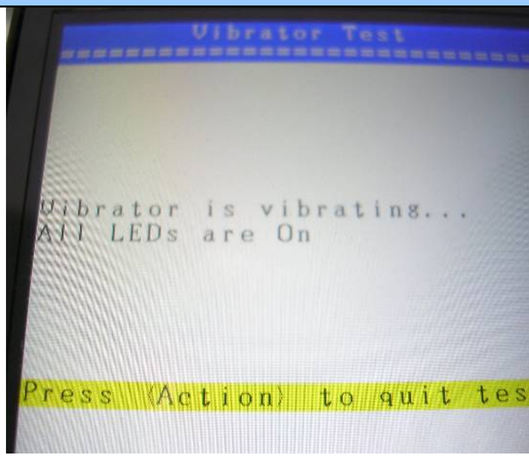
LCD Back Light Test

18. Press Action key to select B.L Test on Function test menu.
19. Press Action key to switch the LCD backlight level from Level 1,Level2, Level3, Level4, Level5 Press Action key to exit and return to Function test menu.



Vibrator Test

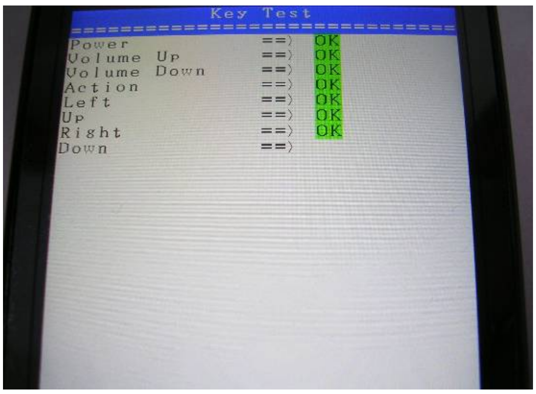
20. Press Action key to select Vibrator Test on Function test menu.
21. Press Action key to exit and return to Function test menu.



Key Test

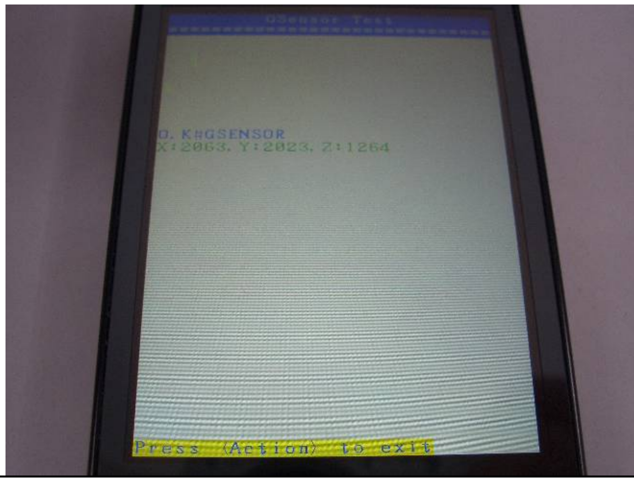
22. Press Action key to select Button Test on Function test menu.
23. Follow the instruction on screen to perform the Key/Button test **(Power, Volume up, Volume down, Key action, Key left, Key up, Key right, Key down)**.

The screen will return to Function test menu after the test is finished.



G Sensor Test

24. Press Action key to select G Sensor Test on Function test menu.
25. Put the unit on the table with when performing this G sensor testing.



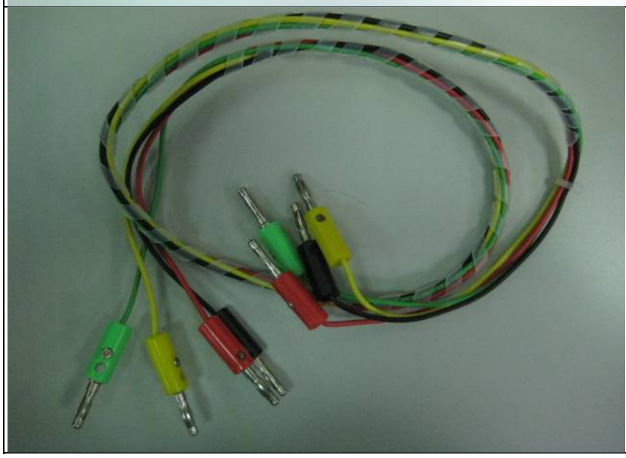
5. Power Measurement Test

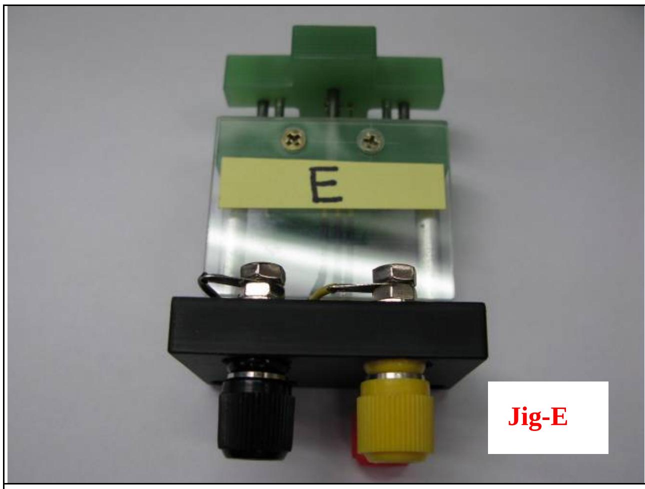
5.1 Main board leakage current Test Procedure

This is a quick method to measure if any abnormal leakage current on main board which caused high power consumption compare to GOOD main board.

(1) Requirement：

- Control box

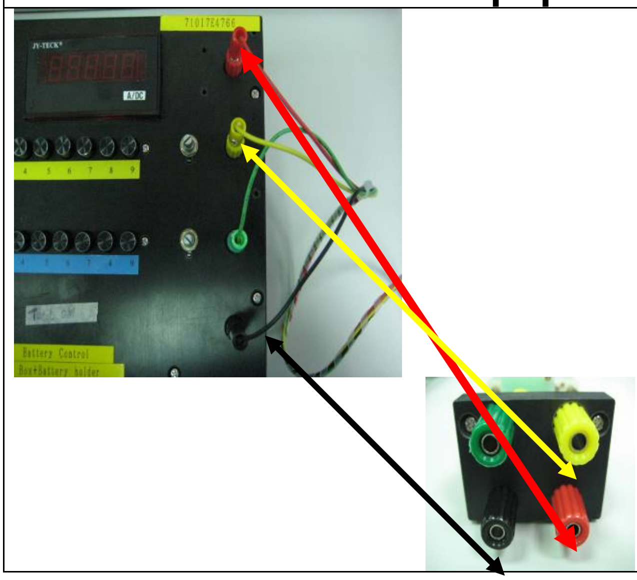
Equipment list	
	**1. Control box**
	**2. 4 colors cable** Cable A: Red Cable B: Yellow Cable C: Green Cable D: Black



C. types Jig

Jig - E (3 pins-Short)

Equipment set up



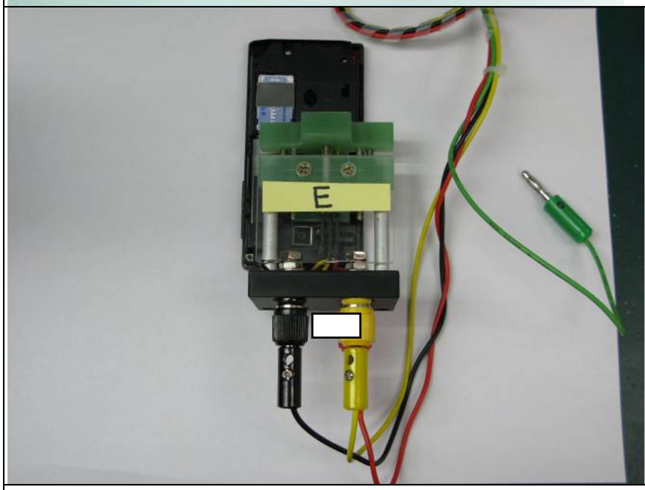
1. Connect control box and jig through
   3 colors cable with red, black and yellow



2. Set up each button by row A~D according to product specification Following is an setting for Diamond

MODEL	JIG TYPE	Button set up matrix			
		A	B	C	D
Diamond	E	0	8	X	0

It means, press button A0,B8,D0

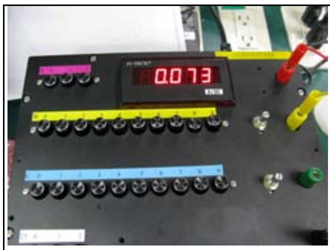
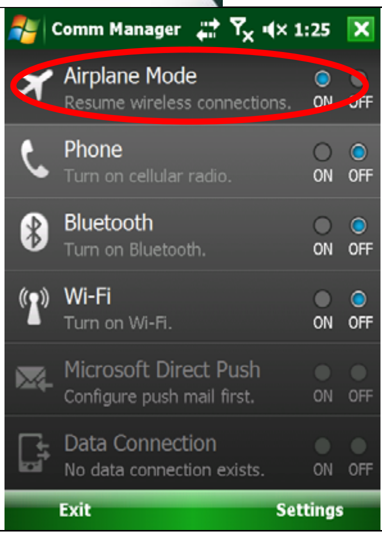


3. Install jig to device
(the photo is for reference only)

Start testing



1. Turn on control box power button

 	2. Press Power button to turn on the Device
	3. In "main page", Check phone status, Click "Turn on flight mode" Set the unit to : * Flight mode * Make sure all RF function is off (phone, BT, Wifi..)
Idle current test	4. Measure Idle mode current. Idle current value must under 80mA, if over the criteria, it means M/B failed, please replace M/B for repair.
Sleep current test	5. After idle current checked, Switch OFF the unit. Unit is turn off and no display. sleep current value must under 3mA, if over the criteria, it means M/B failed, please replace M/B for repair.

Conclusion:

If current consumption is passed at both of idle and sleep mode, it means M/B is GOOD. If there is any item FAILED at idle or sleep mode, it means M/B is failed, please replace M/B for repair.

5.2 Battery rundown test procedure

Test Requirement:

-Windows 2000/XP

-USB Cable

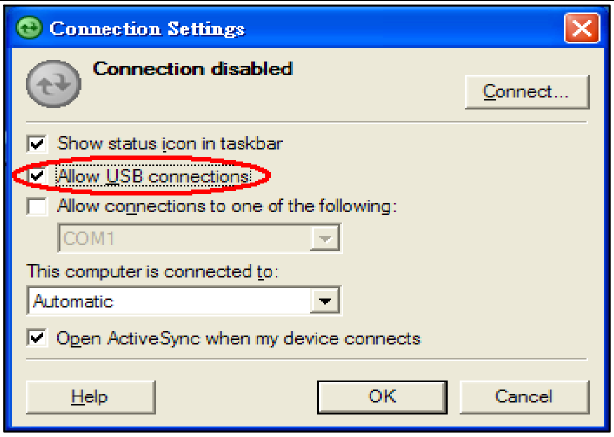
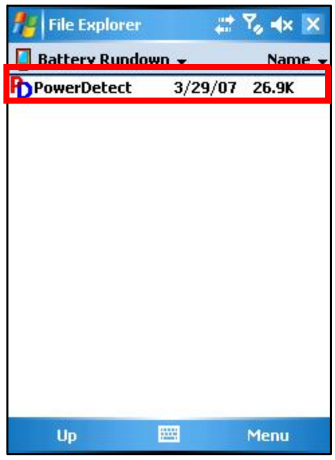
-ActiveSync 4.2 above (WINCE 6.0 should use ActiveSync 4.5)

-Master Unit

-Battery in Warranty

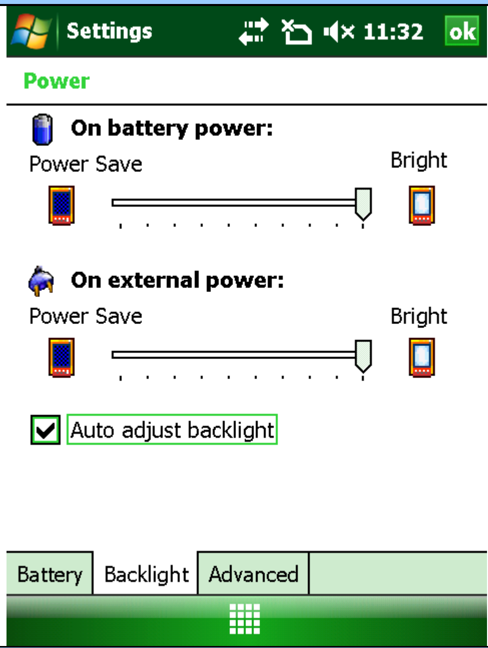
Caution: Please charge your unit to full capacity for battery (until the green light is displayed) before doing the test.

TEST PROCEDURE

Connect device to PC	
I. Setting and allow USB connections in Microsoft ActiveSync. II. Connect your device and desktop/ or laptop via USB cable. III. Check the pop-up message from Microsoft ActiveSync when device is synchronized with PC.	
Copy the Battery Rundown tool into the device	
IV. Make a folder in the device. V. Copy PowerDetect.exe into the folder.	

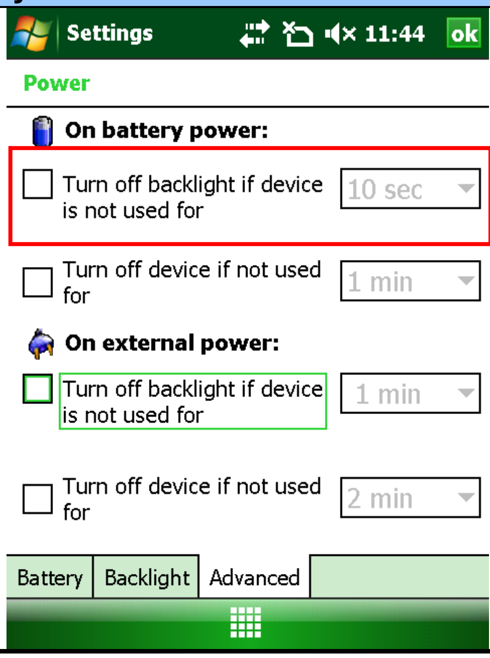
Battery Rundown-1

VI. Adjust the Backlight brightness into the maximum level on battery power.



Battery Rundown-2

VII. Disable Turn off backlight if device is not used for in Battery power.



Battery Rundown-3

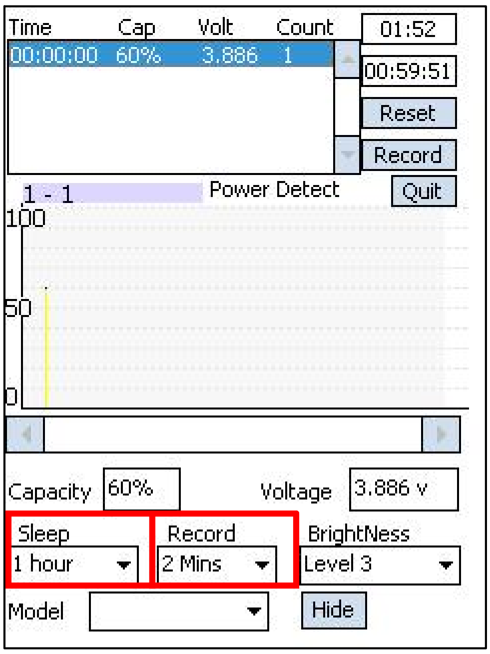
VIII. Execute PowerDetect.exe under WinCE



Battery Rundown-3

IX. Set the Sleep as 1hour

X. Set the Record as 2Mins

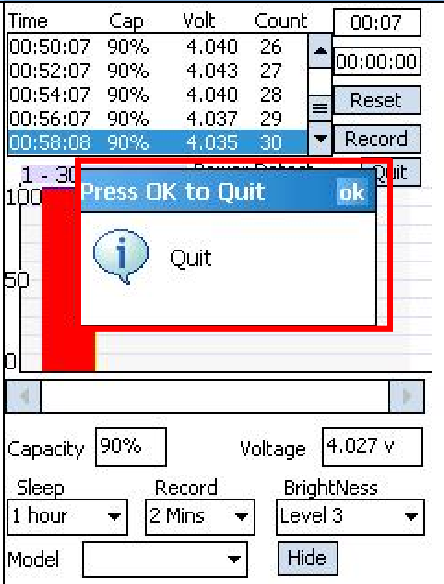


Battery Rundown-4

XI. After running 1 hour, the test will be finished.

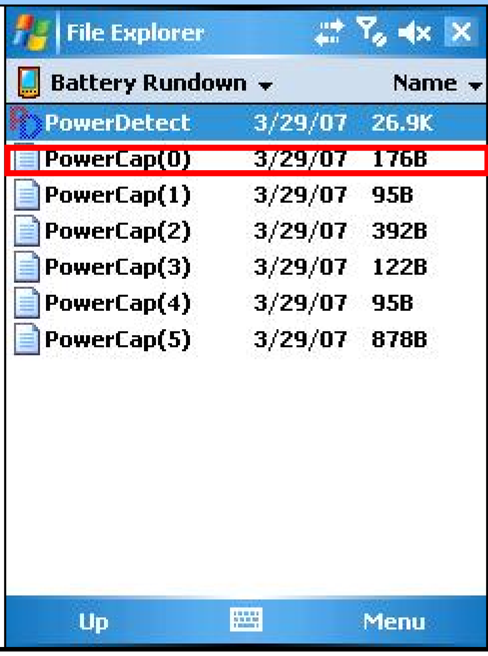
XII. Press the Power Button to turn on the power.

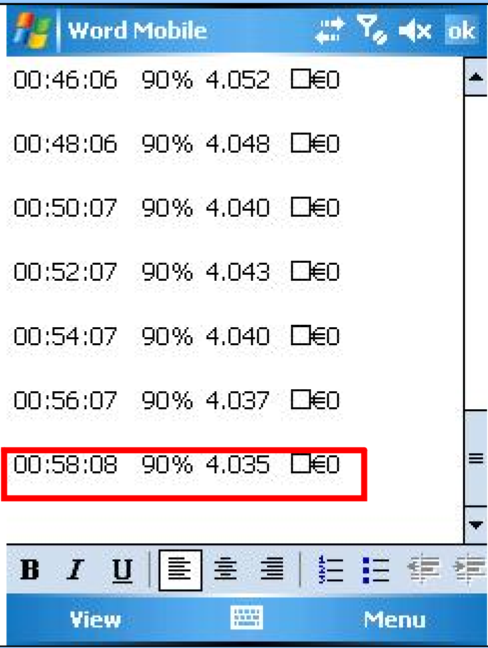
XIII. Click ok to quit the program.



Battery Rundown-5

XIV. Test result is generated into the log file as PowerCap(x).



Battery Rundown-6	
XV. Tag the log file to check the capacity.	
Caution: If the capacity is under 70%, Please replace a new battery.	

6. Cosmetic Inspection Criteria

6.1 Classes definition of inspective area

- Class A area => The front side of main unit involve all buttons and LED lens except LCD.
- Class C area => 4 sides and back views of main unit.
- Class D area => The socket of battery, inner side of battery cover.

Photo of inspection areas

	Diamond #A:  Diamond #B:    Diamond #A:  Diamond #B: 	Diamond #A:  Diamond #B: 
Class A area	**Class C area**	**Class D area**

IT IS GENERIC COSMETIC INSPECTION CRITERIA FOR ALL PRODUCTS IF THERE HAVE ANY CONFLICT WITH THESE GENERIC CRITERIONS; PLEASE FOLLOW THE PRODUCT INSPECTION CRITERIA RESPECTIVELY.

Description

- **D: Diameter / L: Length / W: Width / N: Number of defects/ S: Distance from dot to dot**
- Inspecting distance: 30 ±5cm / Mechanical inspection angle: 90 degrees /
- LCM inspection angle: 90 ±15 degrees / Inspection time: 5 seconds per surface.
- Ambient illumination is to be 500-1100 Lux
- The inspection condition of Newton ring:

a. Inspection distance: 30cm / Inspection time: 5 sec

b. Ambient illumination is to be 500-1000 Lux (Incandescent lamp)

c. Inspection should be performed under the condition that LCD screen could reflect the mirror image of lamp.

d. The criteria of Newton ring's tinges and measure of area must follow up the worst-case sample.

6.2 Display inspection

Inspection Defects			Accept Level	Level
Electrical Characteristic Defects	Bright Dots	Single	Red+ Green+ Blue ≦ 3, S ≥ 5mm.	Minor
		2 adjacent	0	Minor
		3 or more adjacent	0	Minor
	Dark Dots	Single	Total Number ≦ 2, S ≥ 5mm.	Minor
		2 adjacent	0	Minor
	Dark or Bright lines		0	Minor
	All Allowable Dots Defects		Total Number ≦ 3, S ≥ 5mm.	Minor
	Shift and tilt of screen viewed area		The black edge around display area must be detected by front view.	Minor
Foreign Scratch, Objects or Lint on power off status	Scratch		0.03 < W ≦ 0.1 (mm) L ≦ 5 (mm), N ≦ 2 (mm)	Minor
	Lint (linear foreign objects)		0.03 < W ≦ 0.1 (mm) 0.3 < L ≦ 3.0 (mm) N ≦ 5	Minor
	Spots		0.1 < D ≦ 0.3 (mm), N ≦ 4	Minor
	Fish eye on film		0.1 < D ≦ 0.4 (mm), N ≦ 4	Minor
	Breakage on film surface		Not acceptable	Minor
	Total acceptable defect quantity ≦ 10			Minor

6.3 Main unit inspection

Gap & Step inspection			
Description		Accept criteria	Level
1	GAP BETWEEN ALL GENERIC ME PARTS	< 0.4 mm	Minor
2	GAP BETWEEN TOUCH WINDOW AND A PARTS	< 0.3 mm	Minor
3	STEP BETWEEN MATING PARTS	< 0.3 mm	Minor

It is generic cosmetic inspection criteria for all products if there have any conflict with these generic criterions; please follow the product inspection criteria respectively.

7. Generic Troubleshooting

1 · Main Unit Does Not Respond to Power Button

(1) Connect the AC adapter, maybe the battery pack is exhaust and wait few minutes for battery recharging.

(2) Check if battery installed well.

(3) Check the Power Button whether it's damaged.

(4) Replace another battery pack.

(5) Try to start boot-loader mode [refer to section 4.2]. Re-flash ROM if boot loader mode is enabled.

(6) Check all connectors including LCD FPC to Main Board.

(7) Replace Main Board if necessary.

(8) Once the defective part has been identified, verify the defective part again whether the symptom could be duplicated with another unit.

2 · Touch Panel Does Not Respond to Screen Tap

(1) Check the connection of LCM FPC cable whether is properly connected.

(2) Try to cold boot the unit then perform screen tap again.

(3) Try with another T/P with housing assembly.

(4) Try with another Main Board.

(5) Replace T/P with housing if necessary

(6) Replace Main Board if necessary.

(7) Once the defective part has been identified, verify the defective part again whether the symptom could be duplicated with another unit.

3 · Buttons Do Not Respond

(1) Try to cold boot the unit then tries again.

(2) Dismantle the unit; check the status of switches on the Main Board and the plastic parts of the Button not responding.

(3) Try with another Main Board or Front Bezel.

(4) Replace Main Board or Front Bezel if necessary.

(5) Once the defective part has been identified, verify the defective part again whether the symptom could be duplicated with another unit.

4 · Unusual Vertical / Horizontal lines or partial display

(1) Check the connection of LCM FPC whether is properly connected.
(2) Try to cold boot the unit then tries again.
(3) Try to re-flash the ROM code.
(4) Try with another T/P with housing assembly.
(5) Try with another Main Board.
(6) Replace T/P with housing assembly if necessary
(7) Replace Main Board if necessary.
(8) Once the defective part has been identified, verify it again with the defective part whether the symptom could be duplicated.

5 · Back Light Does Not Turn ON/OFF

(1) Check the connection of LCM FPC whether is properly connected.
(2) Try to re-flash the ROM code.
(3) Try with another T/P with housing assembly.
(4) Try with another Main Board.
(5) Replace T/P with housing assembly if necessary
(6) Replace Main Board if necessary.
(7) Once the defective part has been identified, verify it again with the defective part whether the symptom could be duplicated.

6 · PC Connection not possible

(1) If test result is NFF, it is possible caused by user connect cradle to computer before ActiveSync is installed.
(2) Check whether “Connection Settings” in the MS ActiveSync is properly set.
(3) Check whether it connects with other cables or cradle, customer’s cable might be damaged.
(4) Check the external appearance of the connector on the unit whether it is physically damaged.
(5) Try to re-flash the ROM code.
(6) Replace Main Board if necessary.
(7) Once the defective part has been identified, verify it again with the defective part whether the symptom could be duplicated.

7．Battery Pack does not start

(1) Make sure the battery cover is closed properly.

(2) Connect to the AC Adapter and see if it takes charge. Also check AC Adapter condition.

(3) Check whether AC Adapter is functioning properly.

(4) Check whether the condition of Battery Charging status is correct.

(5) Check the appearance of Battery Pack if any abnormal..

(6) Try with another Battery Pack or Replace Battery Pack if necessary

(7) Try with another Main Board or Replace Main Board if necessary.

(8) Once the defective part has been identified, verify it again with the defective part whether the symptom could be duplicated.

8．Battery discharges quickly even after fully charged

(1) Make sure the Battery Pack takes fully charge with AC Adapter.

(2) Check whether the condition of Battery Charging status is correct.

(3) Dismantle the unit and check the appearance of Battery Pack.

(4) Try with another Battery Pack or Replace Battery Pack if necessary

(5) Try with another Main Board or Replace Main Board if necessary.

(6) Once the defective part has been identified, verify it again with the defective part whether the symptom could be duplicated.

9．Battery Pack does not recharge

(1) Make sure the Battery Pack takes fully charge with AC Adapter.

(2) Check whether the condition of Battery Charging status is correct. Charge should be done no more than 4 hours.

(3) Dismantle the unit and check the appearance of Battery Pack.

(4) Try with another Battery Pack or Replace Battery Pack if necessary

(5) Try with another Main Board or Replace Main Board if necessary.

(6) Once the defective part has been identified, verify it again with the defective part whether the symptom could be duplicated.

10．No Sound from Speaker or Distorted sound

(1) Check “Sound & Notifications” Settings in the unit for Sound Enabling.

(2) Make sure it’s not MUTED.

(3) Try to re-flash the ROM code.

(4) Clean up the speaker connection side on MB if there is any contamination.

(5) Dismantle and Check whether the Speaker is properly installed (Orientation)

(6) Replace Speaker if necessary.

(7) Replace Main Board if necessary.

(8) Once the defective part has been identified, verify it again with the defective part whether the symptom could be duplicated.

11 · No Recorded Sound or Distorted sound

(1) Check "Sound & Notifications" Settings in the unit for Sound Enabling.

(2) Make sure it's not MUTED.

(3) Try to re-flash the ROM code.

(4) Dismantle and Check whether the Microphone is properly installed.

(5) Replace Microphone if necessary.

(6) Replace Main Board if necessary.

(7) Once the defective part has been identified, verify the defective part again whether the symptom could be duplicated with another unit.

12 · Wireless connection (WLAN/BT) not functioning

(1) Make sure the wireless environment is OK before connecting to WLAN.

(2) Make sure the wireless connection setting has properly set.

(3) Make a life connection with Internet or another device.

(4) Try to re-flash the ROM code.

(5) Try with another main board if necessary

(6) Try with another Navi board assembly module if necessary

(7) Once the defective part has been identified, verify the defective part again whether the symptom could be duplicated with another unit.

12 · GPS not functioning

(1) Make sure the GPS environment is outside of room before connecting to satellite.

(2) Make sure the GPS connection setting has properly set in navigation map.

(3) Try to re-flash the ROM code.

(4) Try with another main board if necessary

(5) Once the defective part has been identified, verify the defective part again whether the symptom could be duplicated with another unit.

12 · Internal storage device not functioning

(1) Make sure the GPS environment is outside of room before connecting to satellite.
(2) Make sure the GPS connection setting has properly set in navigation map.
(3) Try to re-flash the ROM code.
(4) Once the defective part has been identified, verify the defective part again whether the symptom could be duplicated with another unit.

8. Generic Labeling Plan

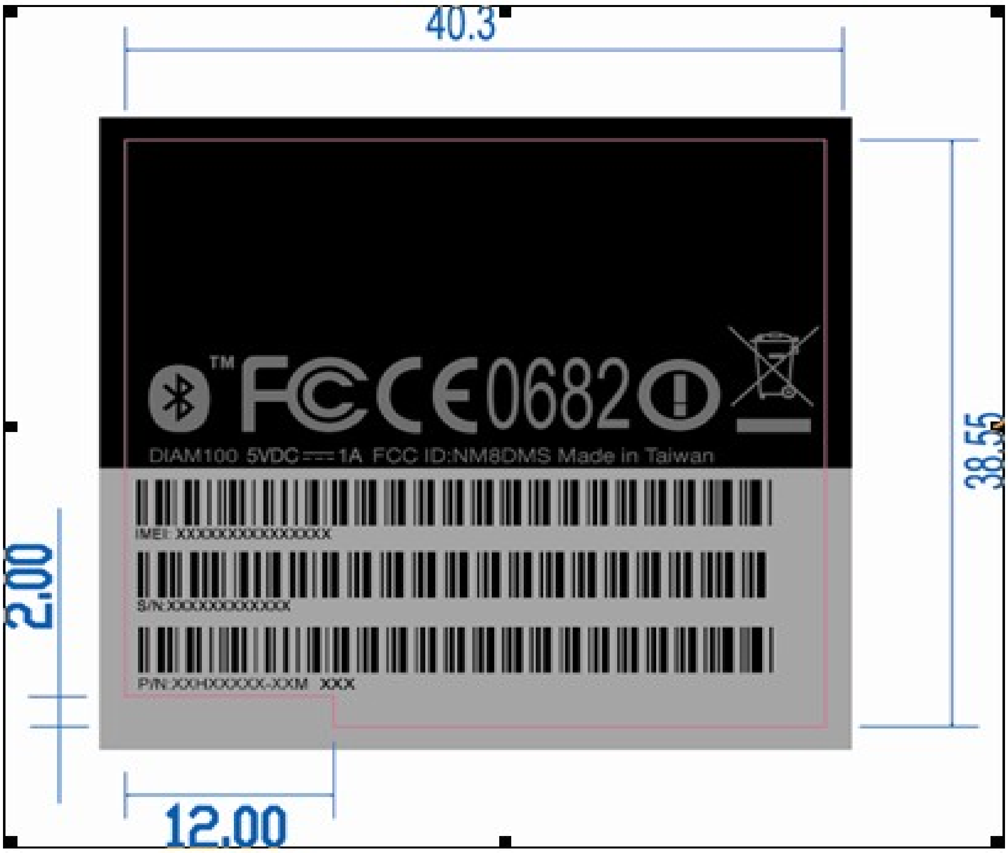
Model ID	DIAM100	DIAM110	DIAM120	DIAM130	DIAM140	DIAM300
Band	UMTS: 900/2100 GSM: 900/1800/1900	UMTS: 850/1900 GSM: 850/1800/1900	de-3G GSM: 900/1800/1900	UMTS: 850/2100 GSM: 900/1800/1900	de-3G GSM: 900/1800/1900	UMTS: 900/2100 GSM: 900/1800/1900
ID difference	Diamond A Metal-Bezel	Diamond A Metal-Bezel	Diamond A no 2nd camera hole			Diamond B Metal-Bezel(Flat)

Agency label_DIAM100

The brand name is shown on Bezel.

HTC P/N: 77H00598-00M

Size: 40.3 X 38.55mm



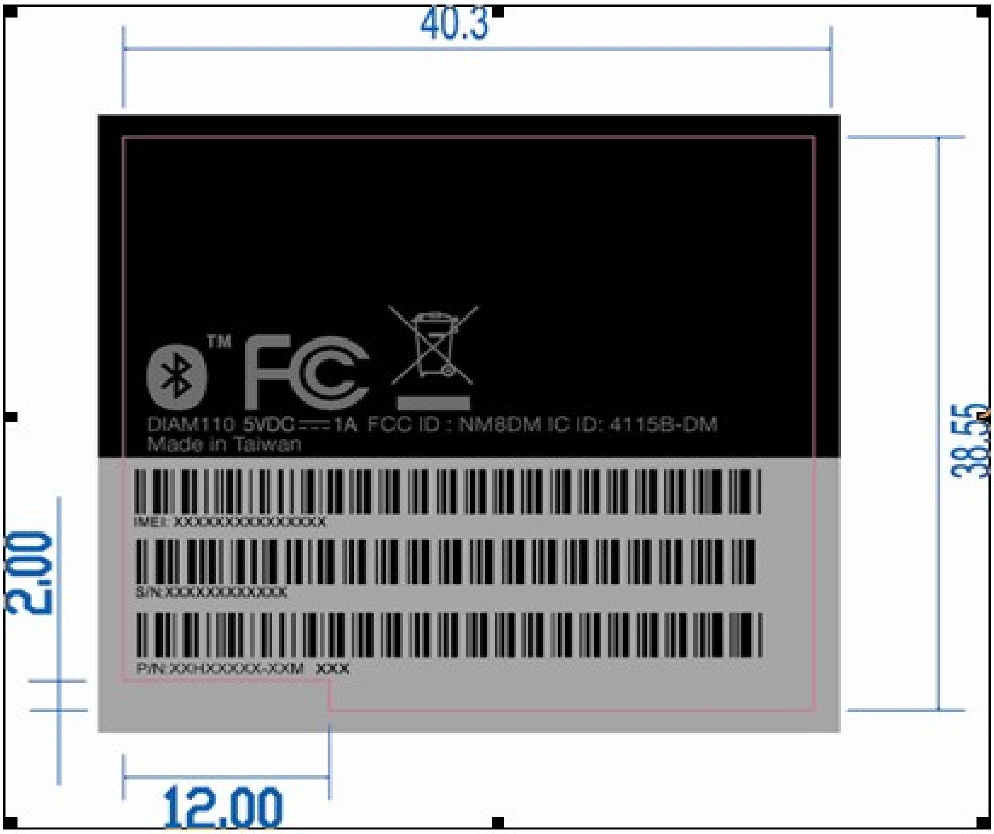
HTC P/N	Description

Agency label_DIAM110

The brand name is shown on Bezel.

HTC P/N: 77H00598-01M

Size: 40.3 X 38.55mm



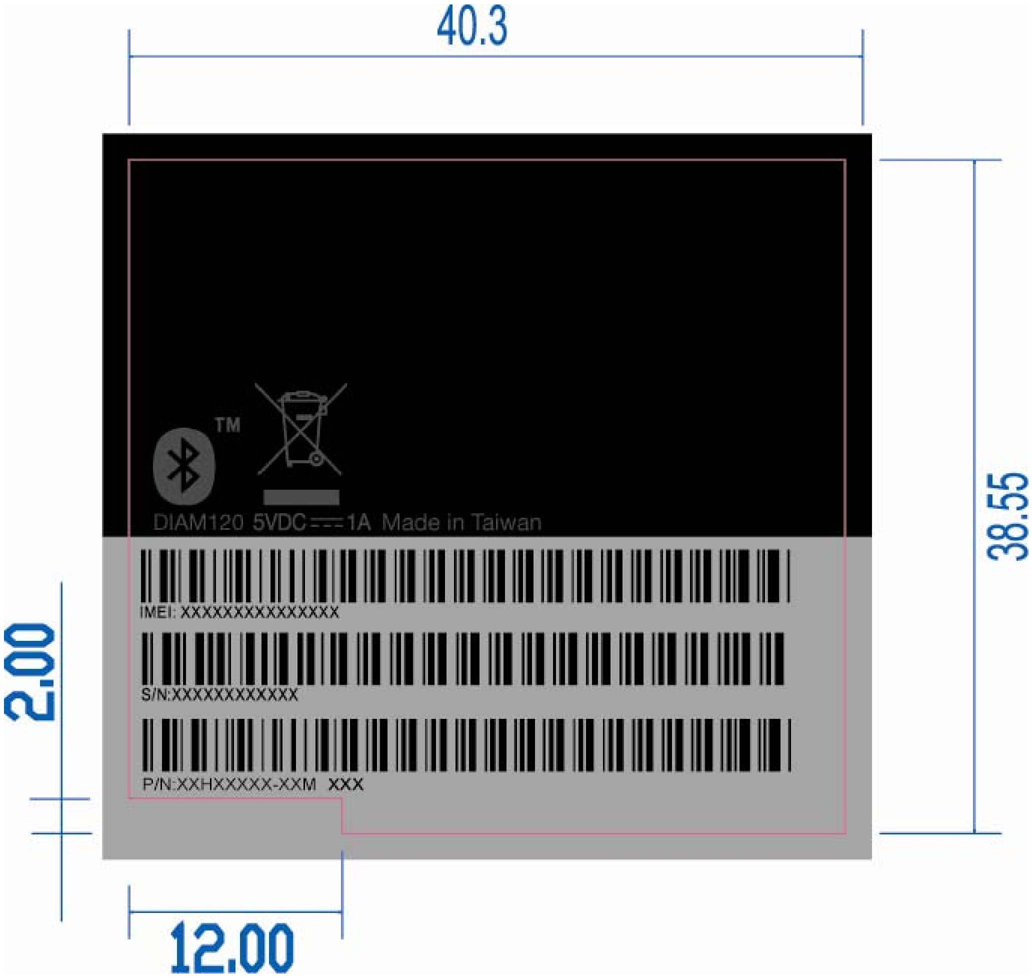
HTC P/N	Description

Agency label_DIAM120

The brand name is shown on Bezel.

HTC P/N: 77H00598-03M

Size: 40.3 X 38.55mm



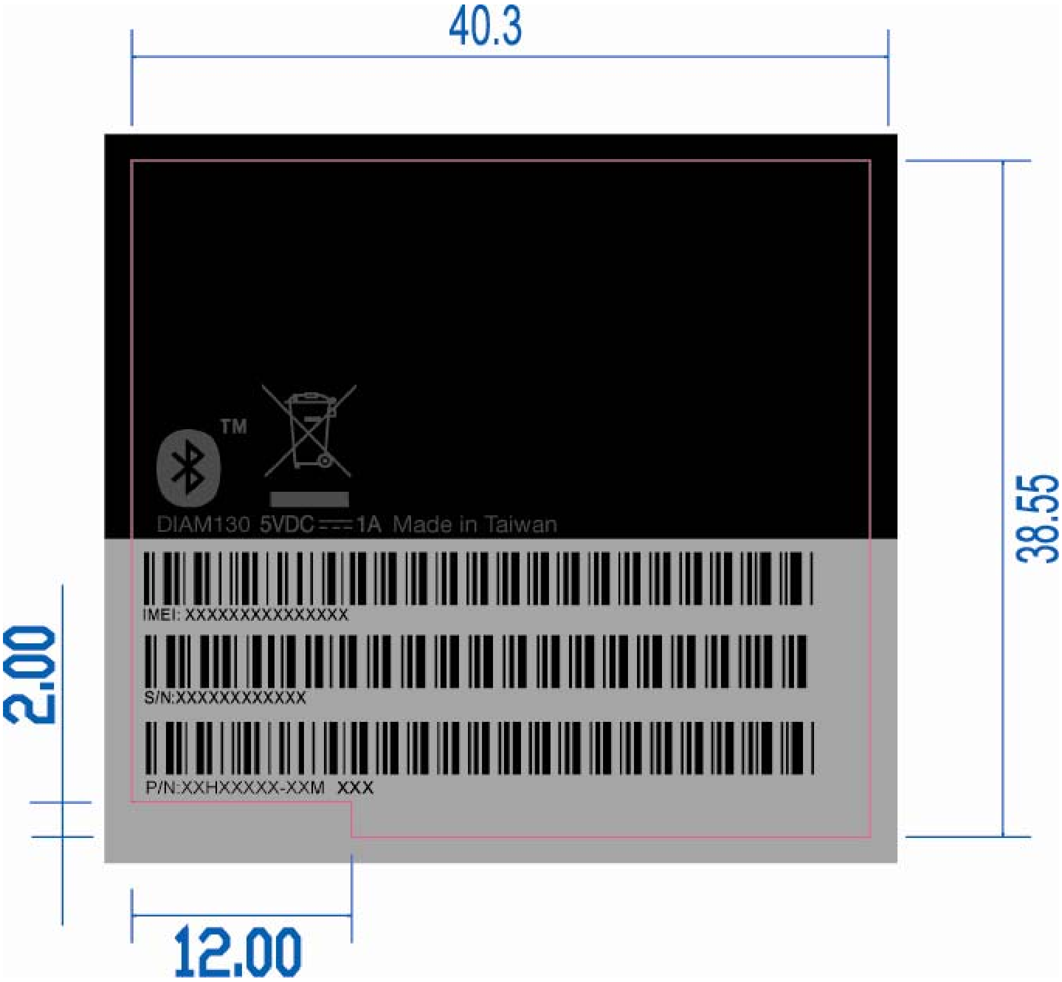
HTC P/N	Description

Agency label_DIAM130

The brand name is shown on Bezel.

HTC P/N: 77H00598-05M

Size: 40.3 X 38.55mm



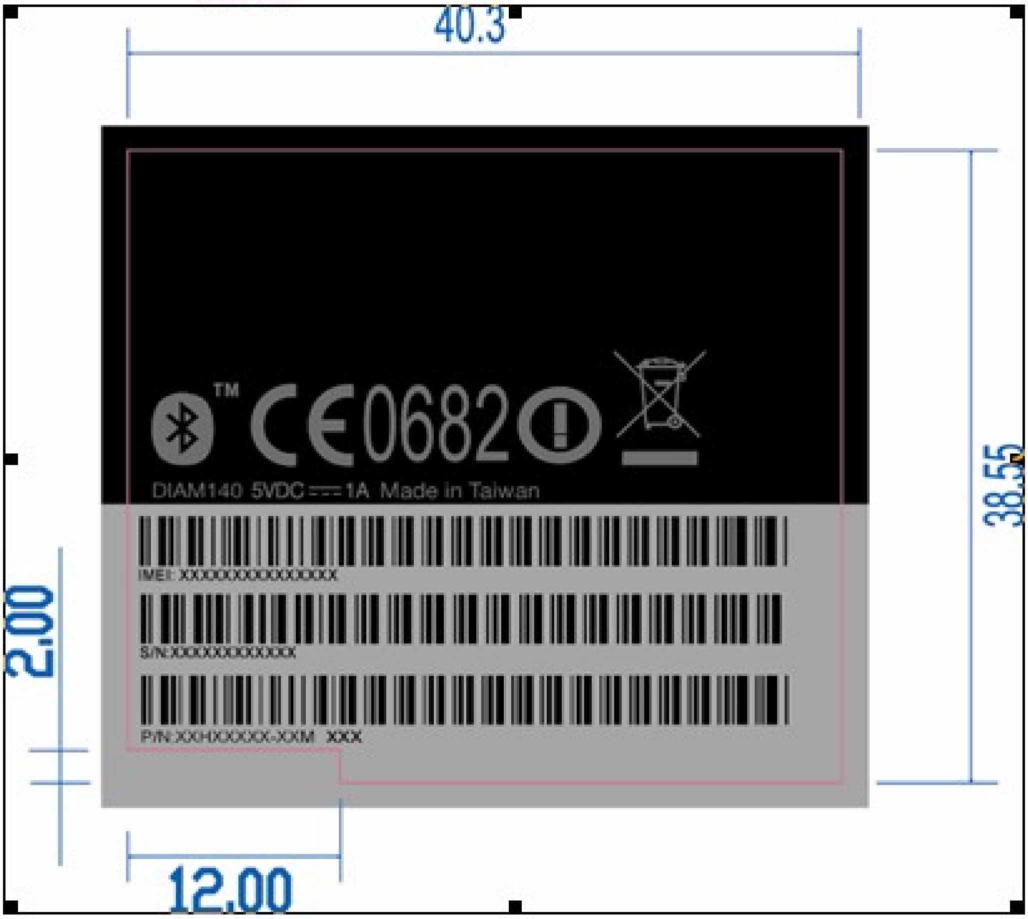
HTC P/N	Description

Agency label_DIAM140

The brand name is shown on Bezel.

HTC P/N: 77H00598-06M

Size: 40.3 X 38.55mm



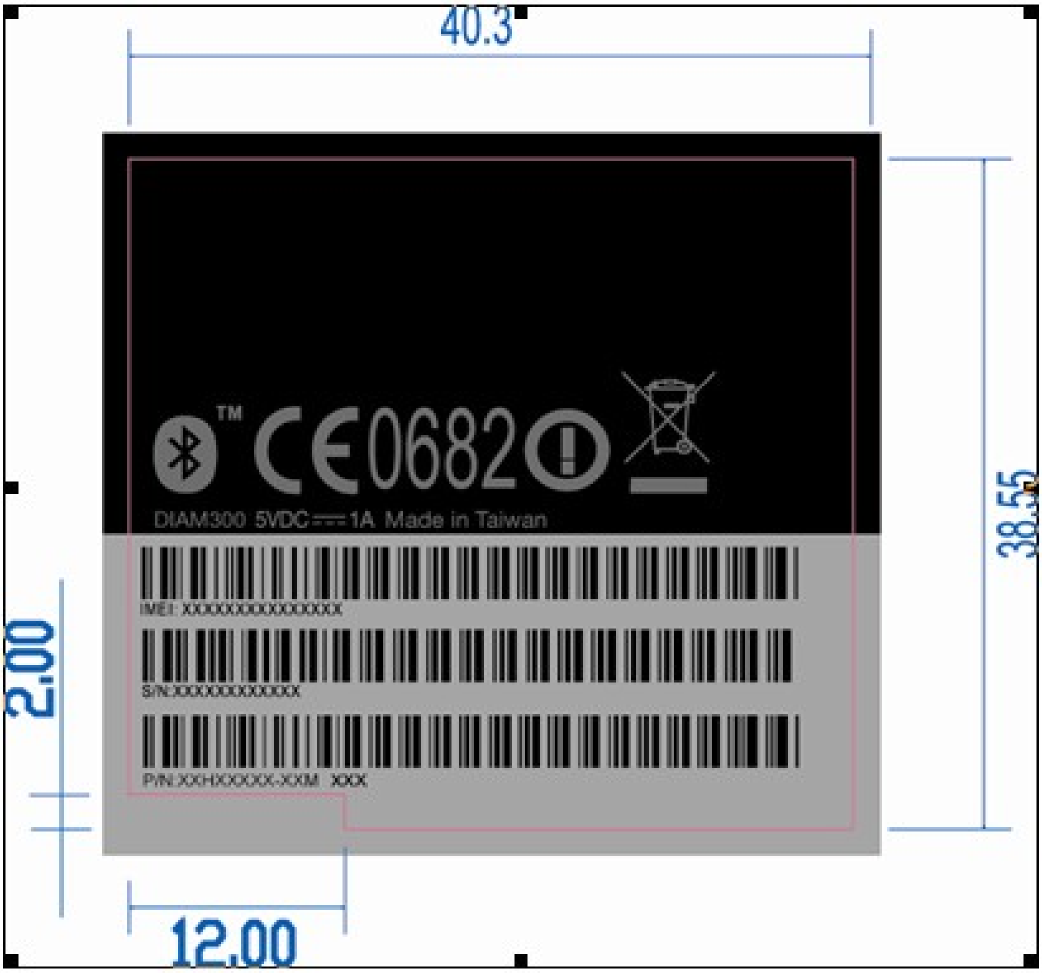
HTC P/N	Description

Agency label_DIAM300

The brand name is shown on Bezel.

HTC P/N: 77H00598-02M

Size: 40.3 X 38.55mm



HTC P/N	Description

Unit label location explanation

Water sensitive label

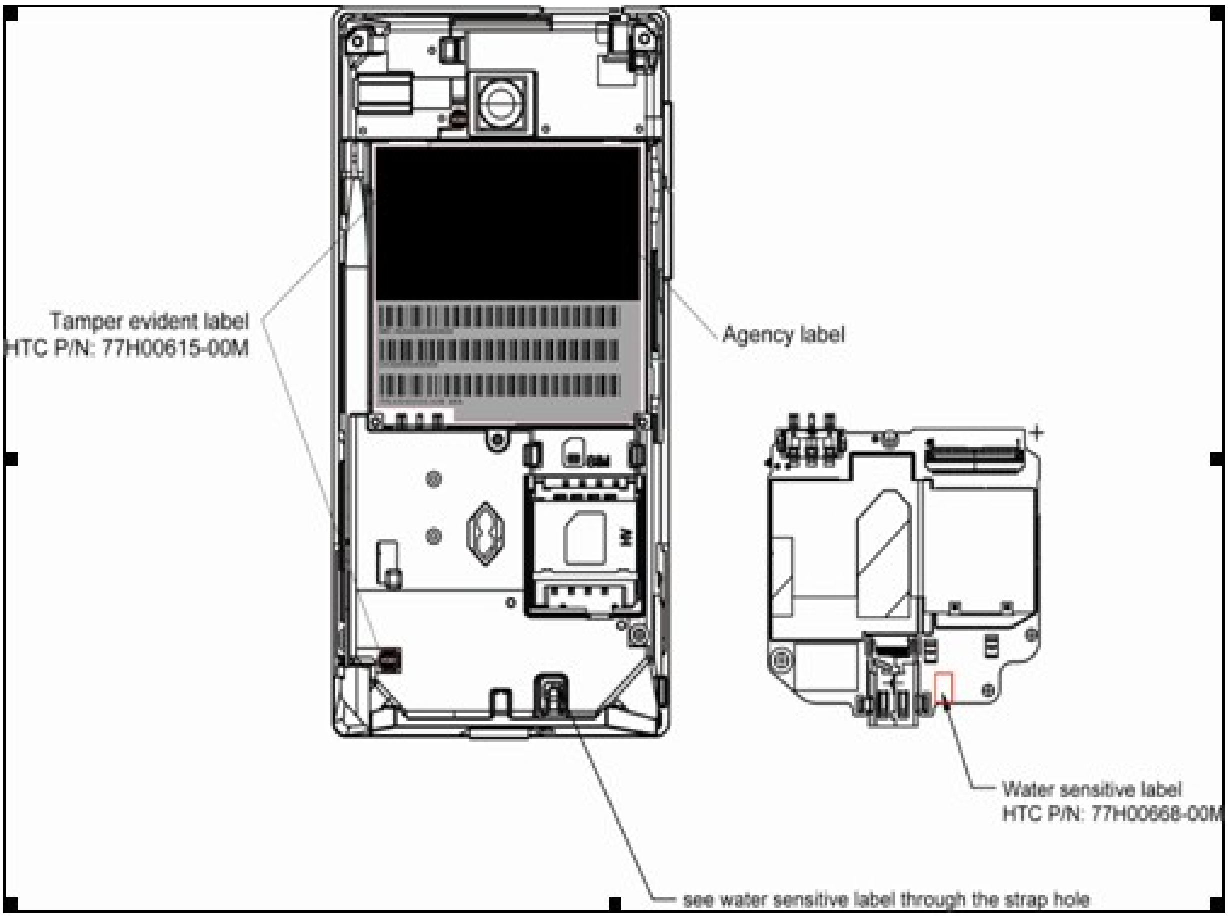
HTC P/N: 77H00668-00M

Qty: 1

Tamper evident label

HTC P/N: 77H00460-01M

Qty: 2



Battery label

Standard battery 900mAh_Li-ion_English version

HTC P/N: 35H00112-00M (TWS)

35H00112-01P (Samsung)



Standard battery 900mAh_Li-ion Polymer (Desay) _English version

HTC P/N: 35H00113-00P (Sony, Desay)



9. Generic Spare Part List and Photos

9.1 SPL for Repair

Item	P/N	Description	Qty	Substitute
1	35H00112-00M	BATTERY_LI-ION,900mAh,3.7V,TWS,ICP533640SR,MAXELL,60/-20degC,42*40*5.5mm	1	
2	36H00684-00M	Speaker,KDIC,MPS-101706BA	1	
3	36H00685-00M	Receiver,KDIC,MPR061501DA	1	
5	51H10073-00M	Rigid-Flex Board ASSY, Upper BD with ACF Assy, Diamond	1	
6	54H00278-00M	Camera Module,FF,Largan,Largan,PREMIER,NBR727 Module drawing, mutual tek,0.3Mpixel,5*5*2.62mm,Diamond	1	
7	54H00279-00M	Camera Module,PREMIER,CMHT-3A403D,AF,TDK,LARGAN,相互,Micron MI-3130,3.1Mpixel,Micron,19.2*8.9*6.3mm,Raphael	1	
8	71H02327-00M	Cover, MEGA POWER,COVER LEFT COAXIAL CABLE,DIAMOND	1	
9	71H02328-00M	Button, UNITEL, PWRBTN, DIAMOND	1	
10	71H02329-00M	Button, UNITEL, VOLBTN, DIAMOND	1	
11	72H02445-00M	Magnet, MAGNET DIAMOND	1	
12	72H02453-00M	Screw,FPHM1.2-1.1(2.6,0.3),Diamond	2	
13	72H02454-00M	Screw,FPHM1.2-0.25*2.4(2,0.35),AISI-1018,BLACK,Diamond	2	
14	72H02456-00M	Screw,FPHM1.4-0.3x2.0(2.55,0.2)Ni/BI, Diamond	4	
15	72H02460-00M	Cover, JUN-YEN, metal cover label, Diamond	1	
16	72H02474-00M	Screw,M1.4-L4.3-D2.6	4	
17	72H02767-00M	Screw,M1.4-L4.3-D2.6,Silver,Diamond	2	
18	73H00278-00M	Cable,MURATA,MXHP34HP0590,PLUG CABLE, coaxial cable, GPS,DIAMOND	1	
19	73H00280-00M	Cable,MURATA,MXHP34HP0980C1,coaxial cable, BT/WiFi, DIAMOND	1	
20	73H20139-41M	FPC Pre-Assy, SIM, GLOBAL FLEX, Diamond	1	
21	74H01123-00M	Sound Box Pre-Assy,DIAMOND	1	
22	74H01131-00M	Cover Pre-Assy,Antenna,Diamond-A,Diamond	1	
23	74H01132-00M	Cover Pre-Assy,Battery,Diamond-A,Diamond	1	
24	74H01133-00M	Cover Pre-Assy,SIM,Diamond-A,Diamond	1	
25	74H01139-00M	Support Pre-Assy, ASSY Support cover right, RF cable, Diamond	1	
26	74H01144-00M	Keycap Pre-Assy,htc navi,diamond	1	
27	74H01159-00M	Stylus Pre-Assy,Diamond-A,Diamond	1	
28	76H02515-00M	Rubber,Silicon,MIC,Diamond	1	
29	76H02650-00M	Cushion,speaker,27.9*12.75*0.5mm,SCF100,Diamond	1	
30	76H02653-00M	Tape,BTB connector,16*10*0.06mm,Kapton,Diamond	1	
31	76H02656-00M	Rubber,BT coaxial plug holder,Diamond	1	
32	76H02692-00M	Mylar,upper board switch,6.5*4.5*0.05mm,Diamond	1	
33	76H02756-00M	Mylar,Power key,Diamond	1	
34	77H00460-00M	Tamper-Evident Label, VOID wording, black background,3*3mm,MING JYE	1	
35	77H00598-00M	Regulation Label,40.3*38.55mm,CHENG MAY,DIAM300,Diamond	1	
36	77H02203-00M	Water Sensitive Label,4*2.5mm,Ming Jye, BlueAngels	1	
37	80H00704-00	FRU-SUB ASSY,TFT-LCD MODULE,TPK,TPK_TW,HITACHI,Black,W/ Bezel,Diamond	1	
38	99HEJXXX-02	PCBA Main Board and sub board	1	

NOTE:
THE PHOTO OF SPL IS GENERIC AND ONLY FOR REFERENCE, THE COLOR AND APPEARANCE MAY BE DIFFERENT FROM THE SHIPPED PARTS, IF YOU WANT TO APPLY THOSE PARTS, PLEASE CONTACT YOUR SERVICE ACCOUNT MANAGER FOR MORE INFORMATION.
AS FOR PICTURE, PLEASE REFER TO THE TABLE AS BELOW.

FOR REFURBISHMENT PARTS, THE TABLE IS FOR YOUR REFERENCE. YOU CAN DO THE REFURBISHMENT ONLY WHEN YOUR SERVICE MODEL IS ALLOWED TO DO IT.

宏達國際電子股份有限公司
High Tech Computer, Corp.

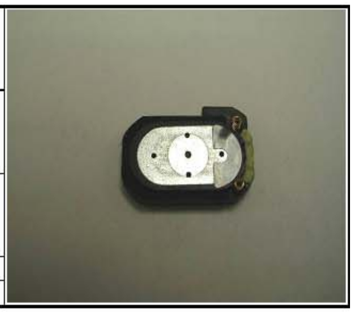
Picture for SPL 80H Kernel and Accessories

(Part no on picture is for Generic version only, please check SPL for detail per customer)

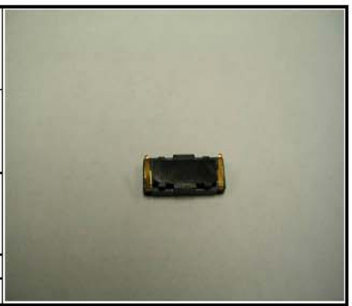
Part No.	35H00112-00M
Description	BATTERY_LI-ION
Q'ty	1
Refurbishment	No
Repair Code	B101



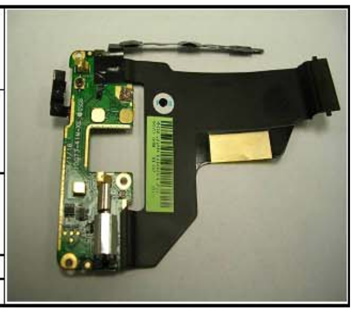
Part No.	36H00684-00M
Description	Speaker
Q'ty	1
Refurbishment	No
Repair Code	G103



Part No.	36H00685-00M
Description	Receiver
Q'ty	1
Refurbishment	No
Repair Code	G103.1



Part No.	51H10073-00M
Description	Rigid Flex Board
Q'ty	1
Refurbishment	No
Repair Code	M201.2



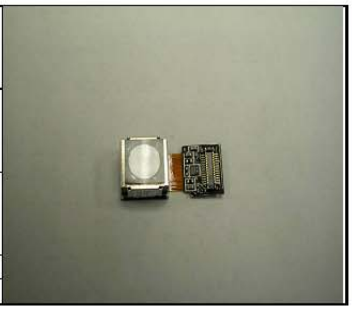
Part No.	99HEJXXX-02M
Description	PCBA Main Board and sub board
Q'ty	1
Refurbishment	No
Repair Code	M001



Part No.	54H00278-00M
Description	2nd Camera Module
Q'ty	1
Refurbishment	No
Repair Code	G117



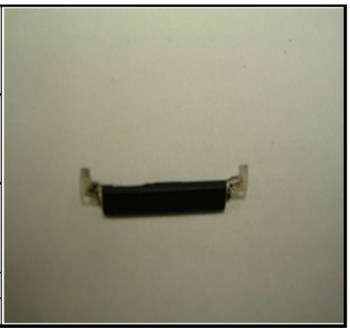
Part No.	54H00279-00M
Description	Main Camera Module
Q'ty	1
Refurbishment	Yes
Repair Code	G117



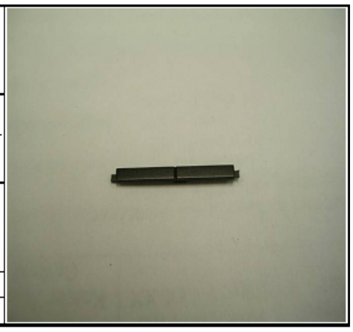
Part No.	71H02327-00M
Description	Left Coaxial Cable Cover
Q'ty	1
Refurbishment	No
Repair Code	N/A



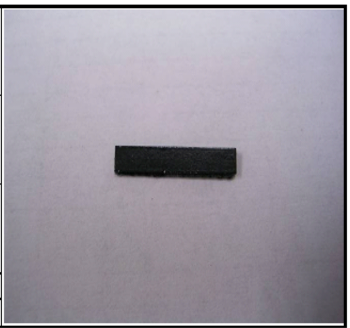
Part No.	71H02328-00M
Description	Power Button Cover
Q'ty	1
Refurbishment	Yes
Repair Code	C106



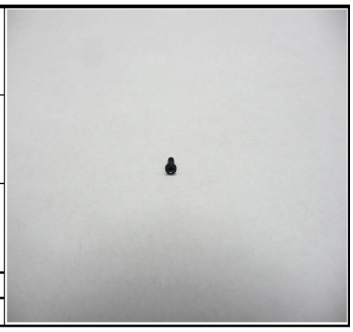
Part No.	71H02329-00M
Description	Volume Button Cover
Q'ty	1
Refurbishment	Yes
Repair Code	C106



Part No.	72H02445-00M
Description	Magnet
Q'ty	1
Refurbishment	No
Repair Code	N/A



Part No.	72H02668-00M
Description	Screw,FPHM1.2-1.1(2.6,0.3)
Q'ty	2
Refurbishment	No
Repair Code	N/A



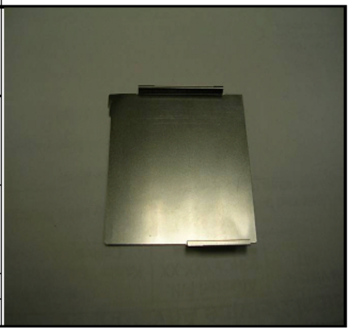
Part No.	72H02454-00M
Description	Screw,FPHM1.2-0.25*2.4(2,0.35)
Q'ty	2
Refurbishment	No
Repair Code	N/A



Part No.	72H02456-00M
Description	Screw,FPHM1.4-0.3x2.0(2.55,0.2)Ni/Bl
Q'ty	4
Refurbishment	No
Repair Code	N/A



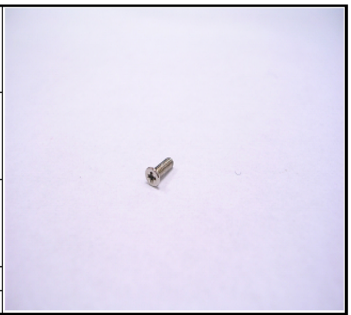
Part No.	72H02460-00M
Description	Metal Cover
Q'ty	1
Refurbishment	No
Repair Code	N/A



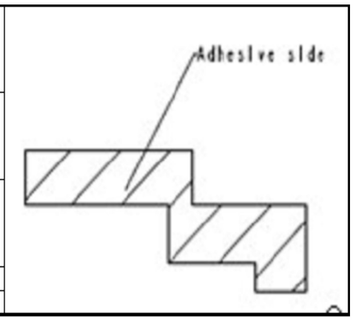
Part No.	72H02474-00M
Description	Screw,M1.4-L4.3-D2.6
Q'ty	4
Refurbishment	No
Repair Code	N/A



Part No.	72H02767-00M
Description	Screw,M1.4-L4.3-D2.6, Silver
Q'ty	1
Refurbishment	Yes
Repair Code	N/A



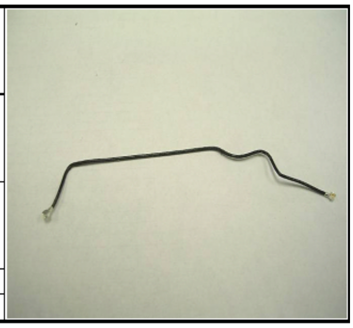
Part No.	76H02650-00M
Description	Speaker cushion
Q'ty	1
Refurbishment	Yes
Repair Code	N/A



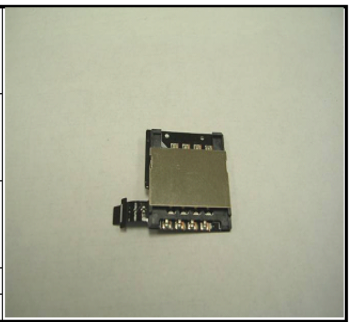
Part No.	73H00278-00M
Description	GPS Coaxial Cable
Q'ty	1
Refurbishment	Yes
Repair Code	B108



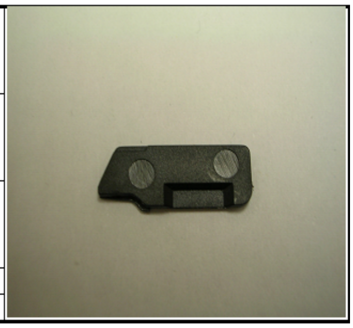
Part No.	73H00280-00M
Description	BT/Wi-Fi Coaxial Cable
Q'ty	1
Refurbishment	Yes
Repair Code	B108



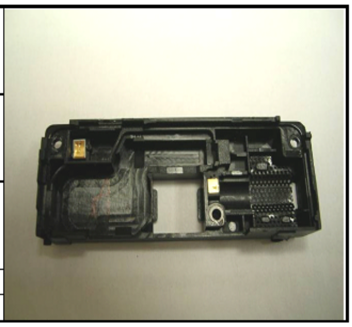
Part No.	73H20139-41M
Description	SIM FPC assembly
Q'ty	1
Refurbishment	No
Repair Code	M201.1



Part No.	74H01123-00M
Description	Sound box assembly
Q'ty	1
Refurbishment	No
Repair Code	N/A



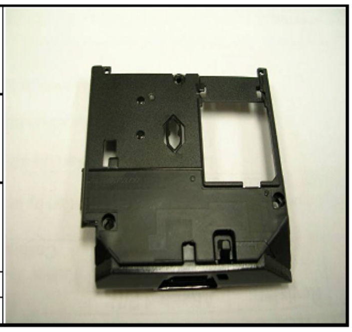
Part No.	74H01131-00M
Description	Antenna cover assembly
Q'ty	1
Refurbishment	No
Repair Code	G114.1



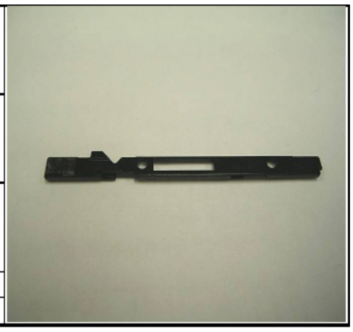
Part No.	74H01132-00M
Description	Battery cover assembly
Q'ty	1
Refurbishment	Yes
Repair Code	C112



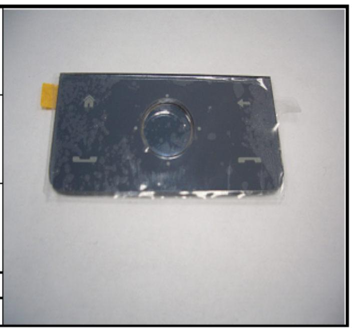
Part No.	74H01133-00M
Description	SIM cover assembly
Q'ty	1
Refurbishment	Yes
Repair Code	C102



Part No.	74H01139-00M
Description	Support cover
Q'ty	1
Refurbishment	No
Repair Code	C108



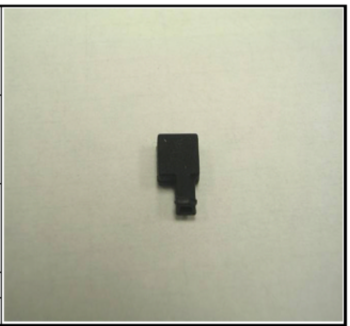
Part No.	74H01144-00M
Description	Navi Keycap
Q'ty	1
Refurbishment	No
Repair Code	C109



Part No.	74H01159-00M
Description	Stylus
Q'ty	1
Refurbishment	No
Repair Code	G102



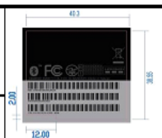
Part No.	76H02515-00M
Description	Microphone rubber
Q'ty	1
Refurbishment	No
Repair Code	N/A



Part No.	77H00460-01M
Description	Tamper evident label
Q'ty	2
Refurbishment	No
Repair Code	N/A



Part No.	77H00598-00M
Description	Regulation label
Q'ty	1
Refurbishment	No
Repair Code	N/A



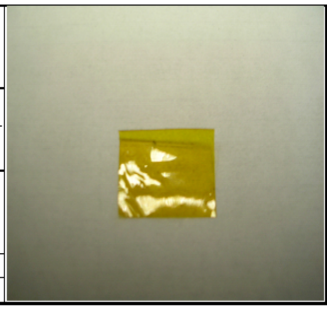
Part No.	77H00668-00M
Description	Water Sensitive Label
Q'ty	1
Refurbishment	Yes
Repair Code	N/A



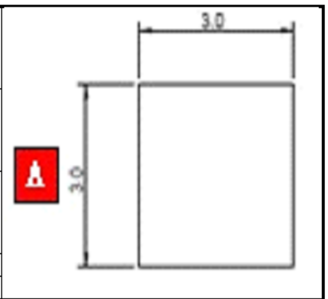
Part No.	80H00704-00
Description	T/P with housing assembly
Q'ty	1
Refurbishment	Yes
Repair Code	L101.2



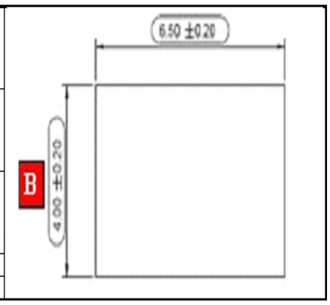
Part No.	76H00653-00M
Description	Tape, BTB connector
Q'ty	1
Refurbishment	Yes
Repair Code	N/A



Part No.	76H02656-00M
Description	BT coaxial rubber
Q'ty	1
Refurbishment	Yes
Repair Code	N/A



Part No.	76H02756-00M
Description	Power key Mylar
Q'ty	1
Refurbishment	Yes
Repair Code	N/A



9.2 Board Level 2.5 Repairs

■ Basic Repair Instructions for Component Replacement:

Step 1 Place the solder-proof tape to cover the surrounding area of the components which being replaced.

Warning：DO NOT overheat the tape and components to avoid the tape melted and the components damaged

Step 2 Use Heater Gun (HAKO850B, set the temperature between 350°C, Air Speed 3~5) to remove the components.

Step 3 Wait till the temperature cool down before removing the solder-proof tape to avoid other components being removed

Step 4 After the damaged or defective components have been replaced; clear the surroundings for solder and flux residues.

Notice:

A. Checking the polarity of CON8, and the position can't be shifted.

B. Checking the polarity of SW8、SW7, and it can't be reversed.

C. All the parts of the PCB should be checked if it is missing or not.

D. The OP must to wear antistatic wrist band .Don't put boards together and avoid hitting them.

E. When you solder and repair that the soldering iron, temperature must be setup 415℃. (The temperature range is 415℃±5℃), and the solder wire's diameter is 0.4/0.5/0.6mm (SAC 305 (1.1%)

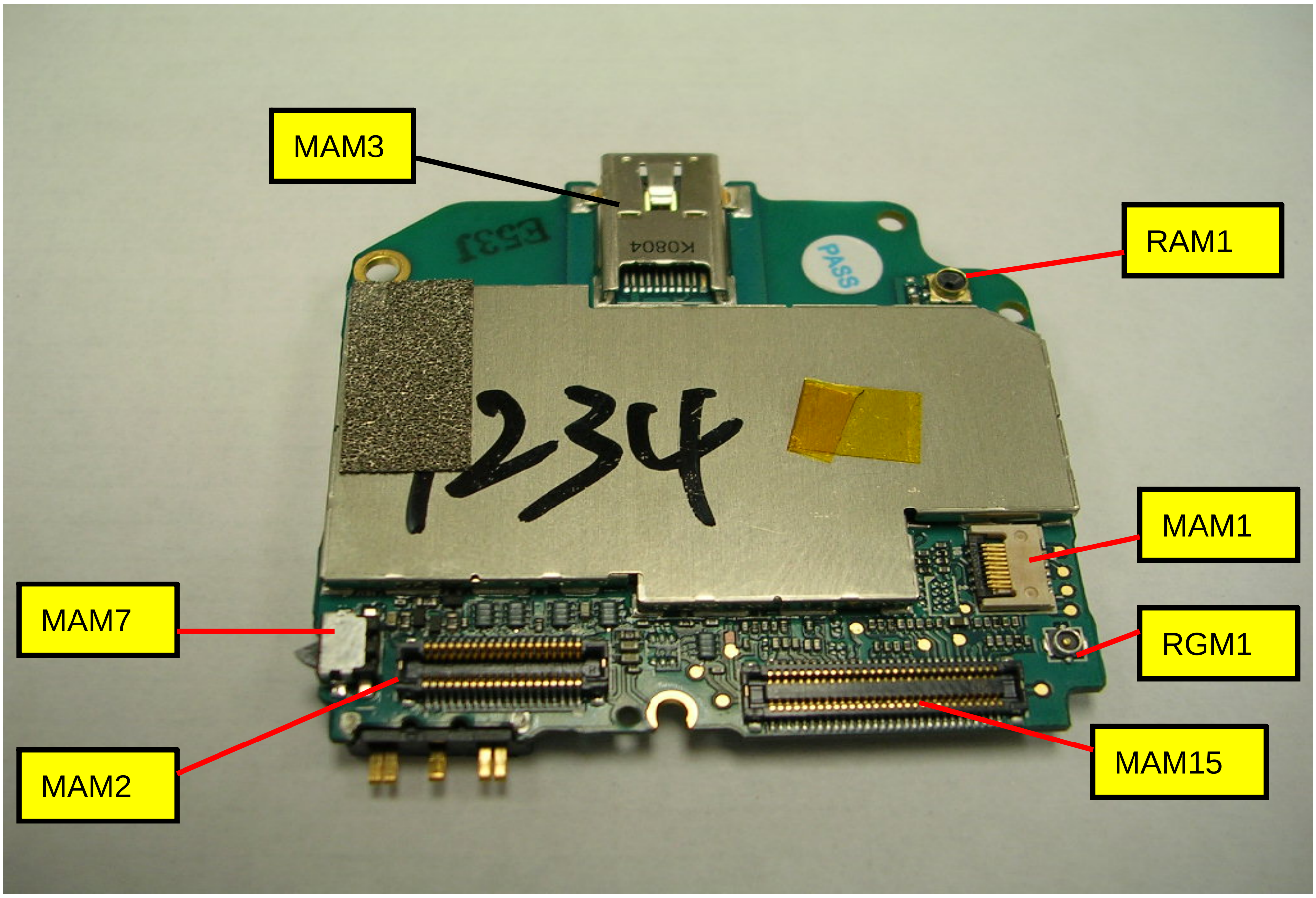
F. Please be noticed to follow below steps for main board repair which is equipped with **Golden Capacitor**:

1. When replacing level 2.5 components located around the golden capacitor:
   I. The temperature of the hot air blower must be under 400°c
   II. When apply the hot air to the part / component, the heating time must be under 20 seconds (including the time of removing and soldering)
   III. The temperature of the soldering iron must be under 350°c
   IV. When apply the solder tip to the part / component, the heating time must be under 5 seconds
   V. The solder tip must not contact with the golden capacitor
2. For BGA replacement: The golden capacitor must be removed before perform pre-heating, heating, soldering and de-soldering process, and then it must be replaced with a new one (please refer to 1.c. and 1.d. steps)
3. For main board which failed to pass the function test, the golden capacitor must be replaced with a new one and must follow below soldering criteria: The temperature of the soldering iron must be under 350°c When apply the solder tip to the part / component, the heating time must be under 5 seconds The solder tip must not have a contact with the body of golden capacitor

51H40485-XXM PCBA-MAIN BOARD (Side A)

Location	P/N	Description	Remark
MAM1	75H00643-00M	Connector B to C,10P,0.3Pitch,FF12-10A-R11A,DDK,0.2A,50V,5.2*4.23*0.9mm	SIM FPC Board
MAM2	75H00772-00M	Connector B to B,90mohm,Female,MATSUSHITA,AXT340164,40P,0.4Pitch,0.3A,60V	Navi Board
MAM3	75H00769-00M	Connector I/O,40mohm,ACON,C-MJE24-00-00,11P,0.45Pitch,0.5A,30V	USB Connector
MAM7	36H00678-00M	Switch,DT-24M,ROKI	Light Switch
MAM15	75H00768-00M	Connector B to B,90mohm,Female,MATSUSHITA,AXT560124,60P,0.4Pitch,0.3A,60V	LCM FPC
RGM1	75H00750-00M	Connector RF,MURATA,MM4829-2702B,4,0.8mm	GPS Coaxial cable
RAM1	75H00734-00M	Connector RF,6P,2Pitch,MM8130-2600,MURATA,2.5*2.5*1.5mm 1	External RF Antenna cable

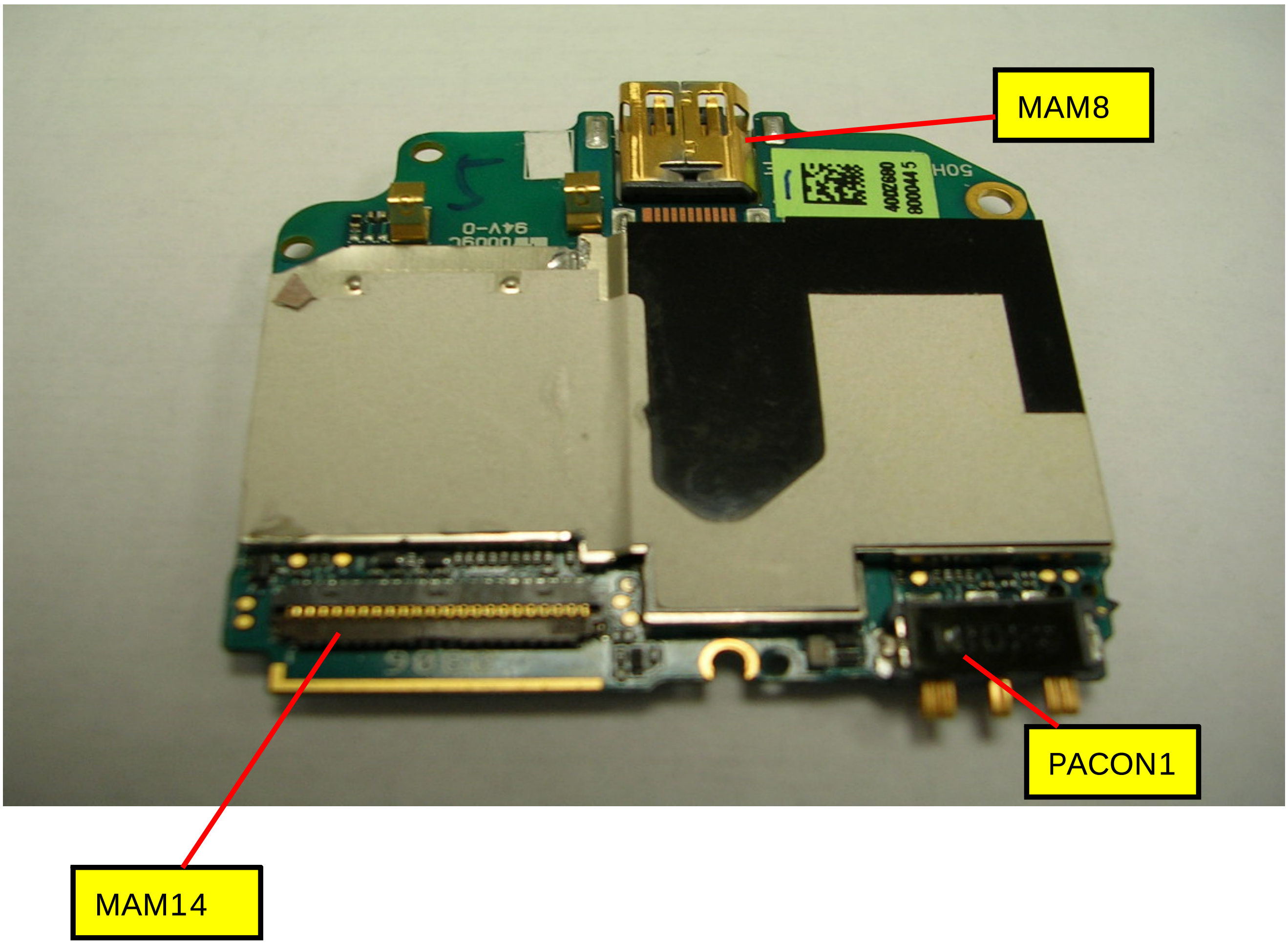
- Side A Photo and Component Location



51H40485-XXM PCBA-MAIN BOARD (Side B)

Location	P/N	Description	Remark
MAM14	75H00628-00M	Connector FPC,45P,100mohm,HIROSE,FH26-45S-0.3SHW(05),0.2A,30V,0.3SHW	Upper board FPC
MAM8	75H00771-00M	Connector I/O,40mohm,ACON,C-MJE23-00-00,11P,0.45Pitch,0.5A,30V	USB Connector
PACON1	75H00776-00M	Connector Device,60mohm,SUYIN,060062MB003GX01ZL,3P,2.75Pitch,2A,12V	Battery Connector

- Side B Photo and Component Location



10. RF Antenna Specification

EIRP & Sensitivity Test				
EGSM	**Channel**	**975**	**42**	**124**
	EIRP (dBm)			
	EIRP Spec	28.0	28.0	28.0
	Cell power (dBm)			
	Cell power Spec (dBm)	-104	-104	-104
DCS	**Channel**	**512**	**698**	**885**
	EIRP (dBm)			
	EIRP Spec	28	28	28
	Cell power (dBm)			
	Cell power Spec (dBm)	-104.0	-104.0	104.0
PCS	**Channel**	**512**	**661**	**810**
	EIRP (dBm)			
	EIRP Spec	26	26	26
	Cell power (dBm)			
	Cell power Spec (dBm)	-104.0	-104.0	104.0
WCDMA Band VIII	**Channel**	**2937**	**3013**	**3088**
	EIRP (dBm)			
	EIRP Spec	18	18	18
	Cell power (dBm)			
	Cell power Spec (dBm)	-104.0	-104.0	104.0
WCDMA Band I	**Channel**	**10563**	**10700**	**10837**
	EIRP (dBm)			
	EIRP Spec	18	18	18
	Cell power (dBm)			
	Cell power Spec (dBm)	-104.0	-104.0	104.0

BT	**Channel 0**	**Channel 39**	**Channel 78**
EIRP (dBm)			
EIRP Spec (dBm)	>-6	>-6	>-6
EIS (dBm)			
EIS Spec (dBm)	<-73	<-73	<-73

	WiFi2400 (b mode)	WiFi2400 (g mode) (11Mbps)
EIRP Spec	>9.0dBm	>9.0dBm
EIS Spec	< -76.0dBm	< -74.0dBm

GPS: @ -128dBm (with Spec: 35)